



Climate Master™

HANDBOOK

A Step-by-Step Guide to Help People Curb Their
Household Climate Impact



UNIVERSITY OF OREGON

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CLIMATE MASTER™

An Innovative, Fun, and Successful Program for Building Community Support and for Curbing Household Climate Impact

This handbook provides the tools and materials needed to establish a program that can effectively engage community members in climate action at the household level while enhancing volunteerism and building community. The handbook is intended for local governments, community groups, educational institutions, nonprofits, extension services, utilities, or other entities that are seeking to educate residents to reduce greenhouse gases in their community. The Climate Master™ program can be tailored to communities of all sizes and geographic locations, whether the mention of climate change stirs up controversy or if citizens cannot wait to avert climate crisis.

In these pages you will find the framework for developing and implementing a Climate Master™ program in your community. The accompanying tool kit provides template materials for training participants and coordinating their outreach activities, as well as for publicizing the program, fundraising, and more. Some materials in the tool kit have resources and information specific to Eugene, Oregon, where the Climate Master™ pilot program took place. You can adapt these materials to your community or work with the Climate Leadership Initiative to do so. The final resource accompanying the tool kit is a template training manual for the Climate Master™ training class. Again, please tailor this to your community.

The Climate Master™ program was developed by the University of Oregon Climate Leadership Initiative to increase climate literacy and reduce local greenhouse-gas emissions at the household level. Program participants in the Eugene, Oregon, program reduced personal greenhouse-gas emissions by an annual average of *two tons per person*. Moreover, many participants found that the program enhanced their quality of life, built community support, and changed the way they made decisions—all on the path toward solving the climate crisis.

Specifically, the Climate Master™ program consists of a thirty-hour training program in which community members learn to incorporate climate action into their daily life by reducing greenhouse-gas emissions in their home, yard, food, transportation, and general consumption choices. Individuals pay for this free or low-cost training with an equal amount of volunteer outreach on climate action over the year following the class. The training class also covers outreach strategies for sharing that information with others, including how to conduct “climate consultations” to support households throughout the community in trimming their greenhouse-gas emissions.

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I. INTRODUCTION

A. Why Individual Action Is Key to Solving the Climate Crisis

Global warming is the most pressing issue facing the world today. The latest report from the largest group of scientists ever to study an issue, the Intergovernmental Panel on Climate Change (IPCC), states that greenhouse-gas emissions must peak *by 2015* and decrease by 80 percent or more by 2050 in order to avoid dramatic temperature increases and the severe economic, social, and environmental impact that would accompany such increases. According to the IPCC, making this shift requires action within the next *two to three years* at all levels of society.

Left uncontrolled, global climate change will lead to increased storm intensity, more drought and reduced water supplies, increased forest fires, loss of biodiversity, rising sea levels and their effect on coastal areas, rising numbers of diseases and heat-related illness, and other social and economic disasters of increasing frequency and intensity. Human contributions to the problem come primarily from the use of fossil fuels and land-use changes that release greenhouse gases (GHG) into the atmosphere.

Most of the focus on reducing GHG emissions has centered on large energy producers, industry, and vehicles. Individuals, however, are the ultimate end-users of most energy production via home heating and cooling, appliances, food, travel, and embedded energy in products we purchase and throw away. A 2007 study found that consumers exert influence on 60 percent of all of Britain's GHG emissions through their purchasing decisions alone. In short, households, directly or indirectly, produce vast amounts of GHG emissions.

National and state climate policies will be vital in resolving the climate crisis. However, effective policies will not be enacted if the need for them is not clearly understood by the electorate. Market-based solutions are also crucial, but markets will fail to account for greenhouse-gas emissions unless people understand the issue, begin to think differently, and demand change. Further, behavior changes can reduce emissions immediately at little to no cost using existing technology. For these reasons a major effort is needed to inform local citizens about the science and economics of

global warming and to empower them to take action to reduce emissions in their personal lives.

To date, however, little effort has been made to educate or engage individuals in reducing household emissions. This is one of the reasons for the general public's low understanding of climate change and why few people think they personally can do much about the problem. The Climate Master™ program resolves these problems by increasing climate literacy and equipping people with specific tools and methods for making a difference.

B. Beyond Information

By now, the majority of the American public believes climate change is real, that it is primarily caused by human activity, and that we must take action to solve the problem. Yet the lack of significant new policies and programs makes it clear that the public is having trouble translating these sentiments into meaningful steps. Many people are not sure what produces greenhouse gases or how they can be reduced. The public also confuses weather and climate change, leading to the perception that climate change is out of our control, unpredictable, and therefore does not require personal action.

So what can motivate people to act? Researchers have long known that information on its own does not change behavior. Similarly, action-oriented proposals also fail without some degree of increased awareness. We all know smoking can cause lung cancer and that junk food is not good for our bodies; but people continue smoking and consuming highly processed foods. A successful outreach program must combine education that increases understanding with specific actions people can take to do their part to solve the climate crisis.

Research shows that people move in a fairly predictable fashion through a series of stages whenever they make a fundamental change in their thinking and behavior. Different change mechanisms are more helpful than others at each stage (the stages and change mechanisms are described below and in more detail in the tool kit, p. 2-2). Attempting to force people into action before they have reached the appropriate stage of change is likely to fail. Similarly, simply providing information will not spur most people to action. The Climate Master™ program succeeds because it combines the building of awareness about global

warming with solutions people can implement in their households to reduce their emissions. In doing so, the program brings the benefits of change, placing the solutions to overcoming obstacles in the forefront of the participants' consciousness, who then go out and share the information with people in the community. Because this program relies on one-on-one contact, outreach can be tailored to match people's current stage of change.

The stages of personal change for the climate are as follows:

Disinterest—"I won't change."

The person is unaware of the causes or solutions to global warming, or unwilling to do anything about it personally.

Deliberation—"I might change."

Recognizes that global warming may be a problem and considers making a change in the *distant* future, but still cannot grasp the problem, see its causes, or identify its solutions.

Design—"I will change."

Decides the benefits of acting to reduce their emissions outweigh the costs of such actions. Commits to take action in the *immediate* future and develops a plan to do so.

Doing—"I am changing."

Actively makes overt changes in thinking and behavior to reduce greenhouse-gas emissions.

Defending—"I have changed."

Consolidates, maintains, and expands action to reduce greenhouse-gas emissions while defending against backsliding.

People who are disinterested or deliberating about whether to take action on climate issues are more likely to move to the design and doing stages only after they decide that the benefits of climate action are twice as great as the downsides. Practically speaking, this means people in the early stages of change need help identifying the benefits of climate-positive behaviors, while also seeing how the disadvantages of such actions are usually temporary or not as large as they first appeared. For example, when encouraging walking for nearby trips rather than driving, the focus should be on the increased physical, financial and mental health benefits of walking trips, as well as the climate benefits. In addition, the downsides of walking, such as the inability to carry goods, should be examined to show that, with the acquisition of a good backpack, the problem is minimized. In later stages of change, when people are taking action,

they tend to be more willing to address the obstacles to change, such as systems for carrying goods, time management, and safe and scenic routes.

Research also shows that, to motivate people to move beyond the design stage of change to the doing stage, making a public commitment to climate protection is important. Many class participants may be in the design stage, and simply participating in the class serves as a form of public commitment. Through class activities, specific commitments can be elicited from those participants who are ready to do so.

After people have begun to act or are in the defending stage of change, constant reinforcement of the climate-positive behaviors are helpful. It is also useful to substitute features and habits that elicit undesired behaviors with ones that lead to climate-positive behaviors, like putting a reusable water bottle in your bag to easily avoid disposable bottles, or, on a larger scale, moving close enough to work to be able to bike or walk.

People in all stages of change benefit from supportive relationships. Foster these relationships by allowing time in the Climate Master™ training

Five Stages of Change for Climate Protection and Sustainability

DISINTEREST "I won't change." No intention to change thinking or behavior. Can't see or won't admit a problem.

DELIBERATION "I might change." Recognition that problem may exist. Beginning to consider the possibility of making a change in distant future.

DESIGN "I will change." Committed to take action in immediate future and designing an action plan to do so.

DOING "I am changing." Making overt changes in thinking and behavior.

DEFENDING "I have changed." Maintaining and expanding the change, while defending against resistance, obstacles and backsliding.

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class for participants to interact and share their experiences with one another.

The Climate Master™ program addresses each of these behavioral-change needs through a step-wise program that combines awareness building, skill building, peer support, and continual positive reinforcement.

C. Why the Climate Master™ Program Works

Some keys to the program's success are that the program

- trains influential community members, who then motivate and train others in identifying and reducing greenhouse-gas emissions in their homes and yards, food and consumption, and their transportation choices.
- provides knowledge of global warming science and of tangible solutions on which participants can act.
- builds participants' self-efficacy—the confidence that their actions will be effective.
- highlights benefits of change and supports participants in overcoming obstacles.
- offers practical skills to support people in reducing emissions in their home-energy use, food and transportation choices, general consumption, and waste.
- develops peer support for climate-positive behavior through the training class and the outreach activities that follow.
- increases personal investment, strengthening participants' sense of personal responsibility and intention to act.
- follows up with consultation recipients and reinforces their commitment.
- reaches people at all stages of change through consultations, the training course, and other outreach activities.
- helps people move through all the stages of change with one-on-one contact and tailored change mechanisms.

D. Benefits of the Climate Master™ Program

Those receiving program benefits include the following groups:

Climate masters reported slowing down their frantic pace of life as they decreased their green-

house-gas emissions thanks to planning their day to avoid driving and other sources of emissions. Others say they felt supported by a community of like-minded people and empowered to check off those lingering tasks on their carbon-busting to-do lists. Many reported feeling healthier as they walked and biked more and made changes to their diet to reduce their greenhouse-gas emissions.

Households receiving consultations benefit from reduced energy costs, increased physical activity resulting from biking and walking instead of driving, motivation to act to reduce their greenhouse-gas emissions, and recognition for what they have already done.

Communities benefit from the coordinated efforts of a brigade of climate masters, trained and ready for action. This group can develop their own outreach events and programs or plug into existing efforts. Beyond that, with sufficient infiltration, communities may see decreased electric loads and traffic, reduced load on local landfills, and an overall reduction in community greenhouse-gas emissions. The program may also result in an increased sense of community as a variety of people are brought together to tackle a common cause.



II. PROGRAM BASICS

The Climate Master™ program consists of two components that can be tailored to meet the unique needs of any community: 1) Climate Master™, a ‘train-the-trainer’ course modeled after the successful nationwide Master Recycler and Master Gardener programs; and 2) household “climate consultations” that include personalized household audits and site-specific recommendations. Climate Master™ participants repay the free or low-cost training they receive with an equivalent amount of volunteer education and outreach. The approximately thirty-hour, ten-week training covers climate change basics, but focuses primarily on practical means of reducing GHG emissions in individuals’ homes and yards as well as through food, consumption, and transportation choices. Their volunteer time consists of conducting climate consultations, staffing information booths at events, public speaking, and other opportunities that serve to educate and motivate many other individuals and households in their community. Thus, volunteerism is enhanced, as is community understanding of and engagement in this vital issue. The result is stronger community connections, cost savings, and environmental benefits.

Survey results from the first Climate Master™ program in 2007 showed a significant increase in participants’ understanding of climate change, their use of renewable energy, and purchasing of local goods and regular use of alternative transportation. Results from the same pre- and postsurvey showed participants decreased their greenhouse-gas emissions by one-third during their participation in the program. Participants throughout the program told us that it changed the way that they thought, incorporating a “climate-positive filter” into their decision-making process.

The following are steps toward developing a successful program. Each of these components is discussed in this section of the handbook:

- Establish goals
- Collect information
- Gather resources and funding
- Structure class and volunteer opportunities
- Recruit participants
- Run the program
- Volunteer coordinating
- Follow-up with households receiving consultations and with climate masters
- Evaluate the effectiveness of the program in meeting established goals

A. Establish Goals

The first order of business should be establishing program goals. These goals frame the focus of the training program.

Some guiding questions include the following:

Will the program have specific emission-reduction targets, and if so, at what level? Is that a per capita or communitywide goal?

Do you want to create measurable targets around raising awareness of climate change and individual action?

How many people will join the training program?

How many outreach contacts will class members make and at what level of contact (one-on-one, through newsletters, and so forth)?

B. Collect Information

This program seeks to arm a host of people with knowledge and communication skills that allow them to work with individuals at any stage in the change process. Progress from the early stages requires a focus on the benefits of the desired behavior—the health, environmental, and social benefits of bike commuting, for example. Individuals in later stages of change are already committed to shifting their behavior. They are more receptive to and will benefit most from assistance in overcoming obstacles. Focus on the benefits of change first, then on overcoming barriers.

Social marketing dictates that programs begin with identifying obstacles to the desired behavior. Fortunately, with climate change there are a plethora of behaviors that reduce greenhouse-gas emissions. This makes it difficult, however,

to focus on the barriers and benefits of any one behavior. In each community, some of behaviors will have a greater impact than others, contingent on factors such as the local energy portfolio, the public transportation system, and the weather. For example, in a community that uses a great deal of low-emission hydropower, saving energy at home might have less of an impact than reducing vehicle miles traveled.

Useful information for program organizers to gather includes the following:

- The community climate footprint to pinpoint the primary emission sources; ask local governments if this has been assessed.
- An electricity portfolio and the average GHG emissions from local energy providers; utilities should know this information.
- A breakdown of transportation modes, listed in the U.S. census.
- An energy portfolio for the community (i.e., are people using natural gas, electricity, biofuels, and so forth).
- Gauging the community mindset: Surveys, focus groups, existing research, and a scoping exercise can be used to measure the stage of change that people in the community are in as well as other important information. Are existing groups tackling climate change? What are they doing and what level of community buy-in do they have? Are people biking, walking, and using the bus system? If not, what is stopping them?
- Stages of change: What stage of change are people at regarding climate-positive behaviors? How do people conceptualize the benefits as well as the drawbacks of certain behaviors? For example, are the cost savings associated with conserving energy important or irrelevant to people?

C. Gather Resources and Funding

We estimate that, typically, the requirements for running this program involve the participation of approximately one dedicated quarter-time staff person to teach the courses and coordinate volunteers. The program could be maintained with more or less staff time, depending primarily on how much the volunteers are managed. For example, if volunteers manage their own “payback” hours,

a volunteer coordinator could simply arrange the staffing of information booths at events, organize speaking engagements, and perform other outreach activities that the community requests, rather than scheduling household consultations and actively seeking and coordinating volunteer opportunities.

Opportunities for funding the Climate Master™ program include the following:

- Local business sponsorships for funds or in-kind donations, including for Climate Master™ T-shirts and energy saving devices such as compact fluorescent light bulbs (see template request letter in tool kit, p. 2-4).
- Contributions from utilities, waste haulers, and the public transportation system (some offer grants, others may give sponsorships).
- City or county government (they may have discretionary funds or may be able to write the program into a related grant proposal).
- Universities, community colleges, and extension programs (these institutes may also provide in-kind support in the form of guest speakers, advertising, space, or use of their name in conjunction with the program to bolster credibility).
- Government or foundation grants for environmental education, energy efficiency, pollution reduction, or community building.
- Tuition from climate masters to participate in the class. If the payment is too high, participants may be reluctant to join or to pay with volunteer hours. We suggest initially charging a minimal fee, if any, and then charging participants who do not complete their volunteer hours in the set time period. In time, as demand for the program grows, it may be possible to increase the payment for the class, with a scholarship option for those unable to afford the cost.

Steering Committee

A steering committee can provide feedback, suggestions, and increase participant commitment at the member’s institutions and within the community at large (particularly with public recognition for the committee). In addition, the steering committee may be able to recommend potential funding sources or even provide sponsorships from their own institutions.

Try to find a varied group of people working in relevant fields to sit on the committee. Possibilities include people who work for the city, the county, local utilities, relevant nonprofits, the local transit district, and others with expertise in the field. One or two meetings a year, coupled with updates by e-mail, may be enough involvement for many on the steering committee. Others may wish to participate more actively. Meeting once before the program kicks off can provide valuable support and information.

D. Structure Class and Volunteer Opportunities

Getting Started

With sufficient organizational capacity to manage a website, online resources can be useful to many participants. Set up a privately accessed website that contains PowerPoint outlines or presentation notes; the class handbook; time sheets; a web form that allows people to log their volunteer hours; a calendar of volunteer opportunities and class sessions; and consultation forms.

Selecting Time and Place

Find a space that will comfortably hold the desired number of people. It should be in a central, easy-to-find location with adequate parking and access to public transportation. Secure the room for half an hour before and at least half an hour after the class to allow time for set-up and clean-up and for participants to converse with presenters or others in the class. Multiple options for presentations will accommodate presenters who want to use PowerPoint, a board, or overhead projector.

In developing the class schedule, investigate conflicts such as major sporting events, holidays, school schedules, or community classes that may draw from the applicant pool. Consider the effect that time of day will have on class makeup: a daytime class may preclude professionals from attending without permission from work, while evening classes may eliminate those with young children. One or more field trips will provide an opportunity for hands-on learning and could include a home energy audit at a participant's home, or a visit to a recycling or building-supply reuse store, residential solar array or "low-carbon backyard."

Audience

The first challenge of the outreach program is to integrate vast quantities of rapidly changing information on a variety of topics. Reducing greenhouse-gas emissions on a personal level encompasses nearly all of our behaviors and every decision we make involving our time and money. In other words, the way we think and perceive the world influences the way we act, and in our fossil fuel-based society, many of our actions have ramifications that affect the climate. When covering transportation, home-energy use, and embodied emissions in general consumption, food, and yards, the scope can easily overwhelm even the well informed. It will be impossible to teach everyone exactly what to do in every situation to best reduce their greenhouse-gas emissions, but it is possible to help people refine their decision-making process and engage in those actions that are clear winners.

The next challenge lies in providing information in a way that is useful for and appealing to both beginners and experts. Many class members will know a great deal about one topic and little about another. Be prepared for vegetarian bikers who live in drafty houses sitting next to off-the-grid dwellers who are not sure about how to cut emissions from that night's dinner. Participants will also be at different stages of change, with some in the "defending" phase and others at the "deliberation" phase.

Here are some tips for troubleshooting these challenges:

- Structure the class to allow for integration of materials (see p. 2-7 in the tool kit for template quiz questions to reinforce and assess learning).
 - Mix activities like role-playing and group exercises with the lecture.
 - Ask participants to read the related chapter of the training manual before each class.
 - Integrate miniquizzes into the class to emphasize key points, refresh participants' memories of the previous class's materials, and to encourage prereading the training manual.
 - Encourage practice consultations and other take-home activities that will solidify learning and make outreach less intimidating. In some cases,

- provide volunteer hours for these activities.
- Begin the program by evaluating the participants' stages of change. Match appropriate expectations and change mechanisms for participants' stages.
 - People in the early stages of change may not be ready to change behaviors, but could benefit from considering the benefits of change and reexamining the downsides. They can be helped to minimize the downsides through being asked to list them and then determine if they are temporary or permanent. People will often find that many of the downsides of change are only temporary.
 - People in later stages will be ready for action and need support in overcoming obstacles or maintaining behaviors.
 - Consider pairing people with a group of others at their stage of change for discussions.

Selecting and Preparing Presenters

The ideal presenter is an expert in the field *and* has experience speaking with the public. This person can present complex information in a straightforward manner and can adeptly field questions.

To identify and prepare presenters:

- Gather recommendations from the local utility and waste-management programs, existing outreach and education programs, educational institutions, and local societies (green building, permaculture, renewable energy).
- Particularly for scientists or others who do not typically deal with the general public, suggest that presenters
 - use few slides with minimal graphs and charts. If the presentation must rely heavily on graphs and charts, try to stick with as few as fifteen or twenty for an hourlong presentation.
 - focus on the big picture rather than delving deeply into details.
 - speak slowly, and if the class is structured in such a manner, allow pauses and opportunities for questions.

- avoid acronyms and jargon.
- add humor and stories to engage the audience.
- remember this is not an academic lecture—they are speaking to the public.
- Ask for evaluations on each presenter from participants (see template evaluation form in the tool kit, p. 2-15).
- Change presenters for future rounds of the program (or even mid-program) according to participants' feedback.

Adapting the Climate Master™ Training Manual

The template training manual was designed to be easily adapted for any community. The Climate Leadership Initiative (CLI) will assist others in adapting the manual to other regions for a fee. Those adapting the template training manual on their own should read through the manual and change all of the region-specific information to match their region. This will consist primarily of altering the content of the resources listed at the end of each section and in the sidebars.

When developing materials, consider the following questions:

- Are the major local sources of greenhouse-gas emissions (transportation, electricity) adequately represented in the training manual? Are there sufficient resources provided for people to make changes in that area?
- Is peak energy use a concern? That is, does the time of day that energy is used affect the fuel mix?
- How energy-intensive is water filtration and pumping? If these activities require large amounts of energy, then consider adding a water-conservation section to the class.
- What are the GHG emissions associated with the community's and region's electricity portfolio (ask the local utility)? This coefficient—pounds of carbon dioxide equivalent per kilowatt hour—will illustrate how local electricity use fares in relation to natural gas and the region's electricity mix.

Class Evaluations

Each class will be unique, based on the participants' background knowledge and learning

styles. We suggest conducting program evaluations at weeks four, seven, and ten of the class to tailor the program to meet their needs and achieve the program goals. (Sample evaluations can be found in the tool kit, p. 28.)

These evaluations should provide an idea of the participants' overall level of satisfaction with the course as well as offer specific feedback useful for improving the course. Acting on participant input immediately by adding or taking away time for group interaction, lecture presentations, or supplementary readings should increase participant satisfaction by the end of the program. Be prepared with a menu of options for shifting the class in one direction or another. Consider lining up several extra presenters "on call" in case participants want additional information from experts during class time.

It may be that some people in the class find the material too elementary. Others might find it too complex while others (ideally) might find it just right. If possible, challenge those who have not yet been pushed by the course, while ensuring that other participants are taking home the basics.

Strategies for helping those seeking more information include encouraging supplementary readings (at the end of each handbook chapter) and increasing the level of information included in class presentations. To avoid losing those participants new to a topic, use reinforcing activities in and out of class, such as homework assignments that prepare participants for the next week and refresh what they have learned from the last week. For example, before the session on food, ask participants to gather all the food they eat in one week and take a photograph or draw a picture. There are more examples of activities in the template training manual in the syllabus and section ends contained therein.

Stress that the purpose of their outreach is to motivate community members and provide resources and information they need to reduce their greenhouse-gas emissions. Climate masters do not need to be experts on every topic and can always point community members toward local or regional experts. For example, preface a presentation on solar energy with the following:

"This presentation has some technical aspects to it. Take in what you can of this. Focus on what a household would need to know in deciding to install a solar water-heating or photovoltaic (i.e., solar electric) system. If members of the household

want to know the details of how a solar system works, you can always suggest the Internet or the resources listed in your handbook."

E. Recruit Participants

It may require extra hours initially to attract the first participants, before there are a group of climate masters to recruit future volunteers through word-of-mouth and through more formal outreach.

Possible forums for publicizing the training program and consultations include the following:

- Public service announcements (PSA) on the radio. Ask local stations if they are able to donate spots. (See tool kit, p. 30, for a template PSA).
- The "community happenings" section of the local daily and weekly papers and on public radio. These announcements should be free.
- Send out press releases to local television and print media announcing the start of the class and any milestones, such as the start of household consultations, the hundredth graduate, and so forth. Ask that the story include contact information and a message that the program is accepting applicants to the next class. A story in the news is a great way to share the program with the community.
- Send out e-mail messages on relevant mailing list servers.
- Maintain a list of interested people. Send out a regular newsletter announcing new sessions of the Climate Master™ class and reminding people about household consultations. If sending out an e-mail newsletter without HTML (hypertext markup language) expertise, consider using a web-based program that provides professional-looking formatting for newsletters and e-mails for a monthly fee.
- Climate masters can staff information booths or speak at community events.
- Connect with related events—presentations on renewable energy, green building, waste reduction—and their sponsors. Ask to speak (or have a climate master speak) for two minutes, set up an information booth, or put out a stack of fliers with information about the program.

F. Run the Program

ONE MONTH OR MORE BEFORE THE CLASS:

Ideally, the majority of presenters are set up and a space is secured by now. This time is for recruiting final participants and preparing materials.

Send out an e-mail reminder to those who have signed up for the class, with information about time, place, and their commitment (for example, thirty hours of volunteer work for thirty hours of training). Call those who do not have e-mail. If there is a wait list, let people know that their space will be filled if they cannot attend, and that they should make it known as soon as possible if they will need to miss classes or are no longer interested.

Contact all presenters and review what is needed from them. Contact them again the week before their presentation to check in with them and to tell them about the group.

Finalize a syllabus and curriculum, determining who the presenters will be, what activities and assignments would best match those presenters, and how to begin and end each class and the session as a whole.

TWO WEEKS BEFORE CLASS:

Contact class participants and give them any final details by e-mail. This is a good time to send out a final syllabus, so people can get excited for the class or drop out if they are no longer interested.

Visit the class space and make sure that everything is set for the scheduled class time. Check now to see that reserved equipment is available and inform presenters of their options.

Print the course materials and consider getting binders or folders for participants to keep their handbook and any handouts. There may be free or low-cost used binders at a school, university, or reuse center. “Walk the talk” by double-siding all printed materials and providing second-hand binders. Some participants may prefer to receive the entire handbook electronically. You can ask them in one of the letters to the group.

Contact print shops and see if anyone will donate T-shirts to graduates. Present shirts at the graduation and ask that participants wear them when they are volunteering. Print shops might be willing to donate the shirts or reduce the cost in exchange for having their logo printed on them.

THE FIRST WEEK OF CLASS:

- Make your final contact with the participants.
- If there is room, contact any interested parties on the waiting list (expect between two and five to drop out).
- Contact the first presenter and review the class agenda.
- Finalize the introduction to the class for the first day.

FIRST CLASS:

Although participants will likely know something about the class, they will probably have questions about how their volunteer hours are going to work, what is expected of them throughout the class and the program as a whole, and more about with whom they are taking the class. Remember to **appreciate participants for taking steps towards curbing climate change.**

Leave time for introductions, which ideally will be made in smaller groups, but also in the class as a whole; provide an overview of the program goals, expectations, and format; and provide time for questions from participants. Complete any paperwork in this class, such as volunteer commitments, liability releases, and presurveys (see the tool kit, p. 31).

And don't forget, name tags go a long way toward creating community and can be useful throughout the class.

DURING CLASS TIME:

Each week, contact presenters for the following week to ensure that the proper equipment is reserved for their presentation and that they know the time, the place, and what you expect from them.

Each class, leave five minutes at the end of the session for participants to fill out presenter evaluations. Collecting these weekly rather than at the end of the session allows for preparing future presenters for the learning styles and needs of that particular group. For example, it may be that participants felt that the first presentation was too dense and that they did not understand the acronyms used. Future presenters can then be forewarned to explain acronyms and check-in throughout the presentation to ensure that the class is with them.

Ideally, the program will encourage participants to apply the information they are learning

in class to their own lives to reduce their personal and household greenhouse-gas emissions—but some may need extra support. **Inform participants that they will be expected to take one action or plan for one future action to reduce their greenhouse-gas emissions each week.** By doing so, they will generate case studies that they can share with those who are part of their outreach effort, as well as reduce their own emissions. Acknowledge that this will be harder for those who have already done a lot to trim their emissions, or for those who are gearing up for action, but are not yet ready to change behaviors.

Part of what motivates people is the sense that others like them are making similar efforts. Build in a time for participants to share either in small or large groups what they have done to reduce their climate footprint during the program. This could take various forms, such as:

- Participants write their emission-reducing actions for that week on a piece of butcher paper as they come into class. By using the same paper for the entire group throughout the session, there will be a visual reminder of the collective emission reductions of the class.
- Take time in every class for people to break into pairs or small groups and share what they've done that week, even if it is preparing to make a change in one area or another.

MIDWAY THROUGH THE TRAINING COURSE:

Give participants an additional ten to fifteen minutes to fill out class evaluations. This is a good time to evaluate whether some of the participants have changed stages. Collect these immediately so that the class schedule and format can be adjusted as needed.

Also, ensure that whatever will be given to the participants at the class graduation is ready or ordered. T-shirts with the Climate Master™ logo are a worthy investment, as they provide publicity for the program, strengthen the participants' connection with the program, and, if worn while volunteering, identify the participants as part of the program.

FINAL CLASS:

Even though the group will be prepared for their volunteer obligations by now, many will probably have final questions about volunteering, reporting hours, and other related issues. Leave

time to answer these questions and for a special ceremony or a chance to share what people have learned and acted upon from the class. Many participants find the sharing of success stories to be one of the strongest bonding and learning opportunities of the class.

G. Coordinate Volunteers

Perhaps the greatest asset of this program is the crew of volunteers now prepared to take advantage of an array of opportunities in the community. As the program continues, the volunteer brigade will grow, as some volunteers will remain connected with the program beyond their committed hours.

On the other hand, volunteer coordinating can take as much time as running the training. There is a spectrum of models to be used in coordinating volunteers, from setting up all of the volunteer activities to asking participants to arrange their own volunteer work. There may be a greater follow-through if volunteer activities are coordinated in-house, but it will also take more staff time.

Tips for Success in Volunteer Coordinating

- Prepare participants from the beginning on what will be expected of them. Ask participants to fill out a commitment form stating that they will pay back their thirty volunteer hours by a certain date and that if they do not, they will pay a set amount of money for instruction and materials.
- If managing volunteer hours, ask participants to provide their availability, so that they are primarily contacted for times when they are free to volunteer. Make a database or spreadsheet of their availability (weekday afternoons, mornings, weekends) and contact information.
- If participants will be conducting consultations, ask them up front to set up a certain number for themselves, with people they know. This serves a dual purpose: 1) reaching many more people with less effort, and 2) reaching them more effectively (research shows that people trust their friends even more than the experts when it comes to information on climate change).
- In some cases, participants may want to fill their volunteer hours by planning an event or activity. By encouraging their creativity and offering support only where needed, the program can have a far greater reach than if

all of the outreach activities were designed in-house.

- An online volunteer calendar could be useful for some people, as could e-mail updates with upcoming opportunities. However, in some cases it will be most effective to make personal contact with people that you're sure would be a good match for an activity.

1. Volunteer Options

If setting up volunteer activities for climate masters, provide an array of options that allow people to do something that feels comfortable to them. Below are suggestions:

Consultations: Consultations are one of the more intensive volunteer activities, in terms of potential positive impact on the recipient as well as coordination and effort on the part of the climate masters. In a consultation, climate masters can tailor their outreach to a specific household's needs, offering support, discussing benefits of action, and troubleshooting obstacles. (See tool kit, pps. 34–52, for consultation materials.)

OPTIONS FOR SCHEDULING CONSULTATIONS

- Ask the climate masters to set up their own consultations—for instance, five to ten over their volunteer period.
- Schedule consultations for those who contact the program after hearing about it on the radio, through newsletters, listservers, or at public events.
- Use the volunteer availability database to set up consultations by calling or e-mailing individual climate masters to fill slots. One strategy is to ask each climate master (at the last class, or on the phone at a later date) to sign up for several consultation slots in a one-to-two-month period. That allows for providing consultation recipients with a selection of specific times that are already filled with volunteers. This scheduling method is time consuming, but provides for frequent interaction and relationship building with the climate masters and consultation recipients. Additionally, consultations can be set up with a rapid turnaround time, say one to two weeks.
- Use a web-based private access calendar. Climate masters can sign up for consultations on their own and someone can contact all parties to confirm.

- When someone contacts the program for a consultation, give their contact information to two climate masters and ask one of them to take the lead in scheduling with the household. They should tell the program manager when a date is set and should confirm that the consultation took place.

When talking to a resident interested in a consultation, ask for their address, phone number, what area they want to focus on (home energy, food, transportation, consumption, yard, water), the best time and method to reach them, and when they want to have their consultation. If signing up online, ask for this information in the initial e-mail or web form.

As soon as the consultation is scheduled, e-mail to the consulting climate master the address, phone number, and other information gathered from the person agreeing to the consultation. Give the person the climate masters' contact information so they can contact them if there are changes to their schedule.

Expect cancellations on both sides. Send out reminders the day or week before to reduce the risk of no-shows.

CONDUCTING THE CONSULTATION

The consultation protocol and worksheets in the training manual will walk the climate masters through their consultations. As much as possible, they should implement emission-reducing changes during the consultation, installing light bulbs, turning down water heaters, and so forth. To reduce liability, they can ask the resident to put in the bulb or make other changes, but the climate masters can walk them through the steps.

Volunteers are likely to feel apprehensive about their first consultation, although most report greatly enjoying conducting consultations once they have done even one.

Put volunteers at ease and prepare them by doing the following:

- Hold a class on home consultations that covers effective communication and sensitivity to working in another person's home.
- Conduct a field trip to a person's home and do a practice consultation. In particular, practice the hands-on aspects of a consultation such as measuring water temperature, turning down the water heater, and selecting the best light fixtures to switch out to compact fluorescents.

- During class, provide opportunities for participants to role-play consultations in the different topics, using the consultation work sheets as a script. This also allows for more one-on-one contact within the class, an increased sense of community, and a chance for participants to share strategies for reducing emissions.
- Assign participants to do one to three practice consultations with their classmates, friends, and family members during the training as homework assignments. Give volunteer credit for these assignments.
- Once a group of experienced volunteers has been assembled, send people out for their first time with someone who has already done a consultation.

A NOTE ON LIABILITY

Reduce risk to residents and to the climate masters by sending the climate masters out in pairs to conduct consultations with people they do not know. Both sides can be asked to sign release forms—the climate masters at the beginning of class, the residents at the beginning of the consultation.

INFORMATION BOOTHS (“TABLING”)

Setting up an information table at public events is a great way to reach many people at various levels of interest and involvement in climate-positive behavior. Put together a file box of standard materials for tabling including a poster, fliers, and a hard copy of an individual carbon footprint calculator. With these materials, volunteers can easily be sent off to table on their own—including setting up and taking down a booth in most situations. Provide volunteers with the focus of their tabling, and encourage them to “make the ask,” whether it is signing up people for consultations, the class, or merely filling out the carbon calculator and considering options for reducing their personal GHG emissions.

PUBLIC SPEAKING

Throughout the training program, consider which people would most effectively speak in public. Setting up a “speakers bureau” of people who are skilled and willing to speak publicly is likely a time to make individualized requests to

climate masters based on their interest and skills. Develop one or more presentation templates and give this to the climate masters well before they are scheduled to speak so that they have ample time to resolve questions.

OTHER OPPORTUNITIES

Some climate masters are likely to develop outreach events or programs of their own. The facilitator or volunteer coordinator can be involved as he or she is able, but climate masters ought to check with the coordinator first if they would like to receive volunteer credit for their time. Consider setting up easy opportunities such as passing out ten to twenty compact fluorescent light bulbs to each climate master at the midway point of the class and asking that they give them to neighbors along with a flier for a consultation. It is also likely that there will be requests from the community to use climate masters for various outreach efforts. These might be excellent ways to integrate the program with the community and to leverage funding and support.

2. Tracking Volunteer Hours

Climate masters can report volunteer hours after each outreach activity, monthly, or even quarterly. We suggest monthly reporting, as it maintains regular contact with volunteers and keeps the program present in their consciousness. Reporting can be done electronically, by e-mail, or by web form. Hours can also be mailed in or reported by phone; however, the latter is possibly the most time-consuming method of tracking hours.

3. Follow-up

Making the effort to contact participants (by phone if possible) every few months following the course can keep them engaged with the program. In following up, ask questions about which volunteer options are working best for them, problems they are having with materials, reporting hours, or signing up to volunteer. Some climate masters may develop their own volunteer opportunities, which others could utilize. Checking regularly with volunteers will allow for a useful flow of information.

H. Evaluate

Along with evaluating the training program, it is valuable to evaluate the entire programs' ability to reach the set goals. The Climate Leadership Initiative developed a pre- and postsurvey to evaluate the pilot's impact on people's behavior and attitudes about climate-positive actions, and can assist other communities in developing evaluation tools. Along with asking participants about their knowledge and concern about climate change and their stage of change, our survey asked people about their climate-positive behaviors and sought to construct their personal climate footprint.

Some personal emissions are easier to measure than others. For example, it is easy to calculate the GHG emissions accruing from someone's electric use based on their utility bill, but difficult to calculate the climate footprint associated with someone's consumption of food and other goods. Until the latter are more straightforward to measure, consider framing questions on food and general consumption in terms of changes to previous behavior, rather than in terms of absolutes.

It may also be possible to obtain objective data from utilities (on home-energy use), transit districts (on bus-ridership), and from waste haulers (on trash and recycling). Contact these entities before starting the program, in case they would like participants to sign release forms in order to share their data.

I. Refine

Evaluating the program should provide the necessary information to continually improve upon and refine the program so that it best meets the set goals. Use direct feedback from participants to retool the training and volunteer program. The pre- and postsurveys will shed light on the strengths and weaknesses of the program and whether it is necessary to shift the focus of the program as a whole.

J. Technical Assistance

We at the Climate Leadership Initiative (CLI) can provide ongoing technical assistance to support the development of a sustainable program. On a fee-per-services basis, CLI can work with organizations on such tasks as

- adapting materials
- program evaluation

- developing materials on new topics
- assessing participants' stages of change
- assessing community GHG emissions
- identifying and securing ongoing program funding
- developing posters, fliers, and talks for climate masters conducting outreach
- program publicity and participant recruitment

We can be reached at
Climate Leadership Initiative
PO Box 51182
Eugene, Oregon 97405
Telephone: (541) 346-0786
Fax: (541) 346-2040
climlead.uoregon.edu
climlead@uoregon.edu

III. TOOL KIT

This portion of the replication manual is designed to provide your community with templates for many of the materials you will need to run your own Climate Master™ program. Where identified in the text, you may adapt these templates with information specific to your community.

A. Staged Approach to Change for Global Warming Communications and Policy Interventions

Why do so many global warming communications and policy initiatives struggle? Because they are one-size-fits-all general-education or action-oriented initiatives that reach only a small percentage of the population who are either not interested in change or not ready to act. Typically, 80 percent of any population lies between these two poles. The people that other climate change efforts fail to address naturally resist change efforts.

Stage-Based Approaches to Change: In contrast, research shows a stage-based approach to be much more effective than generic information or action-oriented initiatives. This approach utilizes communications and policy instruments targeted to the specific stage of change that individuals or groups are in, with the goal of moving them to the next stage of change all the way to action—thus engaging people in the change process even if they are not yet ready to take action themselves or are already engaged in action.

The First Key to Successful Climate Protection and Sustainability Efforts: *Know the Stages of Change of Your Target Group and Match Change Mechanisms to Those Stages!*

- Each stage of change is *predictable and can be diagnosed*.
- Successful movement through each stage requires that a *specific set of activities be completed*.
- Certain change mechanisms, which include communication, policies, programs and other processes that help modify thinking and behavior, are *more helpful than others* in each stage.
- Mismatching change mechanisms with the stages of change can *slow, halt, or reverse* climate protection and other sustainability efforts.

The Second Key to Successful Global Warming Efforts: *Build Both Tension for Change and Efficacy*

- To motivate fundamental change, sufficient tension must be established between some deeply held unmet values and aspirations and current conditions (tension for change), and sufficient confidence must exist that the changes required to close the gap and reduce the tension can be achieved (efficacy).
- This means that awareness building is necessary but insufficient to motivate fundamental change. Similarly action without some level of awareness-building is doomed to fail.

The Third Key to Successful Global Warming Efforts: *To Build Efficacy, Emphasize the Benefits of Sustainability Practices in the Early Stages and the Downsides in the Later Stages of Change*

- Research shows that for people to advance from the early stage of disinterest to the later stage of doing, an individual's perception of the *benefits* of new thinking and behavior must increase by an average of one standard deviation.
- The most important task in the early stages of change is, therefore, to enhance a group's perception of the benefits of engaging in sustainable thinking and behavior *twice as much* as they decrease their perception of the downsides.
- The flip side of this point is also true. In the doing and defending stages of change, the focus must *turn to the downsides of change due to the need to overcome obstacles*.

Change Stages and Most Helpful Change Mechanisms

Disinterest Deliberation Design Doing Defend

Cognitive and Experiential Change Mechanisms →
Behavior Change Mechanisms →

Disturbances →

Awareness-building →

Choice expansion →

Emotional inspiration →

Supportive relationships →

Organizational/self-reevaluation →

Commitment →

Helping relationships →

Reinforcement →

Substitution →

Structural Resign →

B. Sponsorship Request Letter

Company Name
PO Box Number
Hometown, Oregon 97123

To Whom It May Concern:

This letter is to determine if [company name] would consider sponsoring a local Climate Master™ program to engage households in collectively reducing their individual greenhouse-gas emissions or carbon footprint.

Global warming is the most pressing environmental issue facing the world today and [company name] is feeling the effects. Without rapid action, global warming will have a devastating impact on our local economy, quality of life, and environment. Households are the end-users of most energy production, and are, therefore, directly or indirectly the source of most greenhouse-gas emissions through home-energy use, food, travel, and embodied energy in products purchased. However, even many of those citizens who are eager to act do not know how they can reduce their own emissions. Meanwhile, local citizens are hungry for a means of effectively involving themselves in the issue of climate change, but have little outlet for such involvement at this point.

This highly successful program, run by [company name], aims to educate people about climate change and engage them in activities in their household and community to help resolve the issue and achieve their full potential as citizens. The Climate Master™ program is modeled after the thriving Master Gardeners and Master Recyclers program across the country. Individuals take a ten-week training course and then volunteer thirty hours to assist other households in assessing and reducing their carbon footprint. Thus, volunteerism is enhanced, along with community understanding of, and engagement in, this vital issue. The result is stronger community connections, cost savings, environmental benefits, and leadership training across a broad cross-section of the public.

In other communities, participants in Climate Master™ programs see benefits through cost savings from decreased energy use in their homes and their transportation choices. Participants also report increasing their people-powered travel and decreasing the amount of meat and processed food they consume, all of which have proven health benefits. Moreover, through the Climate Master™ course, these newly empowered community members have access to the support structure to motivate others towards similarly positive behaviors. In this way, we are able to build capacity to improve the health of the community and its residents.

As a cosponsor of the next Climate Master™ class, [company name] would receive publicity based on their level of contribution (see attached sponsorship levels). [Company name] will also benefit from the increased name recognition of its climate-friendly products. Finally, [company name] will make a positive contribution to what may be the most pressing issue of our times—global climate change—through reducing greenhouse-gas emissions.

We hope that [company name] will contribute a [dollar amount] donation to support the Climate Master™ course in the fall of [year], however we would be very grateful for any level of support. Other local sponsors include [company names]. Our partners include the [partner names]. We hope that [company name] will join in sponsoring this exciting project.

Please feel free to contact us with questions about the program and [company name]’s potential sponsorship.

Best wishes,
[Name, title, organization]



Sponsorship Opportunities

Climate Master™

Join the Program!

FREE

Participate in the Climate Master™ class to reduce your personal greenhouse gas emissions and motivate others to do the same. Take part in this innovative program with an employee, friend, or family member, piloted in our community, now expanding across the region.

To be a sponsor, we expect that you will promote the Climate Master™ program and services to your constituents through notice on your website, newsletters, or other means of your choice. More active involvement by your staff is welcome.

Every Climate Master Sponsorship listed includes:

- Your name included on list of sponsors displayed on website for one month and in four newsletters with a circulation of more than 500 readers statewide.
- Ability to advertise that you are a sponsor of the Climate Master™ program

Affiliate Sponsor

Contribution: \$1,000–2,499

- Recognition on class handbook, given to participants and online, by organization name
- Yearlong recognition in e-newsletter
- Yearlong recognition on website
- Recognition in promotional materials for fall class, by organization logo

Cultivating Sponsor

Contribution: \$2,500–5,000

- Logo on outreach materials used by Climate Masters
- Logo on class t-shirts
- Prominent recognition in promotional materials for fall class
- Prominent recognition on class handbook, by organization logo
- Yearlong recognition in e-newsletter
- Yearlong recognition on website

Lead Sponsor

Contribution: \$5,000–10,000

- Recognition in media promotions, if available
- Logo on outreach materials used by Climate Masters
- Logo on class t-shirts
- Prominent recognition in promotional materials for the class
- Prominent recognition on class handbook, by organization logo
- Yearlong recognition in e-newsletter
- Yearlong recognition on website

C. Sample Quiz Questions for Final Quiz or throughout Training Class

CLIMATE MASTER™ QUIZ QUESTIONS

CLIMATE SCIENCE

1. What is the greenhouse effect?
2. Name the three major greenhouse gases and their major sources.
3. What are some of the impacts of climate change to your region?

HOME-ENERGY USE

4. What are the four primary factors affecting the amount of energy used for heating and cooling a home?
5. Each degree over ____ adds ____ percent to the heating portion of your utility bill. On the other hand, a temperature of ____ degrees saves energy while cooling the home.
6. How do you calibrate a nondigital thermostat?
7. How do you calibrate the thermostat in a refrigerator?
8. How do you calibrate a water heater's thermostat and what is the ideal temperature?
9. Setting back the thermostat 10 to 15 degrees for eight hours can cut your annual heating bill by ____ percent.
10. How does a simple fan help reduce home-energy use?
11. For improvements in home-energy efficiency, the options are much different for renters than homeowners. What are some improvements in efficiency that would be helpful to both renters and homeowners?
12. Which appliance typically consumes the greatest amount of energy in a household?

TRANSPORTATION

13. How many pounds of CO₂ does the average vehicle emit per mile?
14. What is the most GHG-intensive form of travel?
15. What percentage of total GHG emissions does the transportation sector account for in your state?
16. What simple things can you do to maintain optimum fuel efficiency for your vehicle?

GREEN BUILDING

17. What are embodied emissions?

18. What are some of the components to a green building?

RENEWABLES

19. What forms of energy are considered renewable?

20. What are “green tags” and “renewable energy certificates”?

21. Do biofuels reduce greenhouse-gas emissions? If so, by about how much for 85 percent ethanol (E85) and 99 percent biodiesel (B99)?

22. What kinds of vehicles use E85? What kinds use E10?

YARD

23. Name at least three sources of greenhouse-gas emissions associated with yards.

24. What is grass-cycling?

25. Why garden with “low-input” plants?

CONSUMPTION AND WASTE

26. What is the most important step in cutting greenhouse-gas emissions associated with consumption and waste?

27. What does postconsumer waste mean with respect to recycled materials?

28. How can people in your area recycle waste associated with electronics or computers?

29. How can you stop junk mail?

30. What are some important factors to evaluate before making purchases?

FOOD

31. What is a food mile?

32. Is this the best standard for judging food-related greenhouse-gas emissions?

33. Are all food miles created equal? Rank the greenhouse-gas impact of food transportation methods.

34. How does eating organic foods help reduce a person’s carbon footprint?

35. How does reducing the number of meals produced with meat products and replacing them with plant-based foods reduce a person’s carbon footprint?

36. How can people find out about foods grown in your area?

37. What is community-supported agriculture and how can people find out more about it?

38. Why are there greenhouse-gas emissions associated with eating meat? What about fish?

CLIMATE MASTER™ FINAL QUIZ RESPONSES

CLIMATE SCIENCE

1. What is the greenhouse effect?

The effect produced when atmospheric gases absorb and reemit short-wave radiation. In lay terms, people associate the greenhouse effect with an insulating blanket of atmospheric gases that trap heat in our atmosphere. This effect makes our planet inhabitable by maintaining a balance of heat, but excess emissions of greenhouse gases by humans is leading to a runaway greenhouse effect.

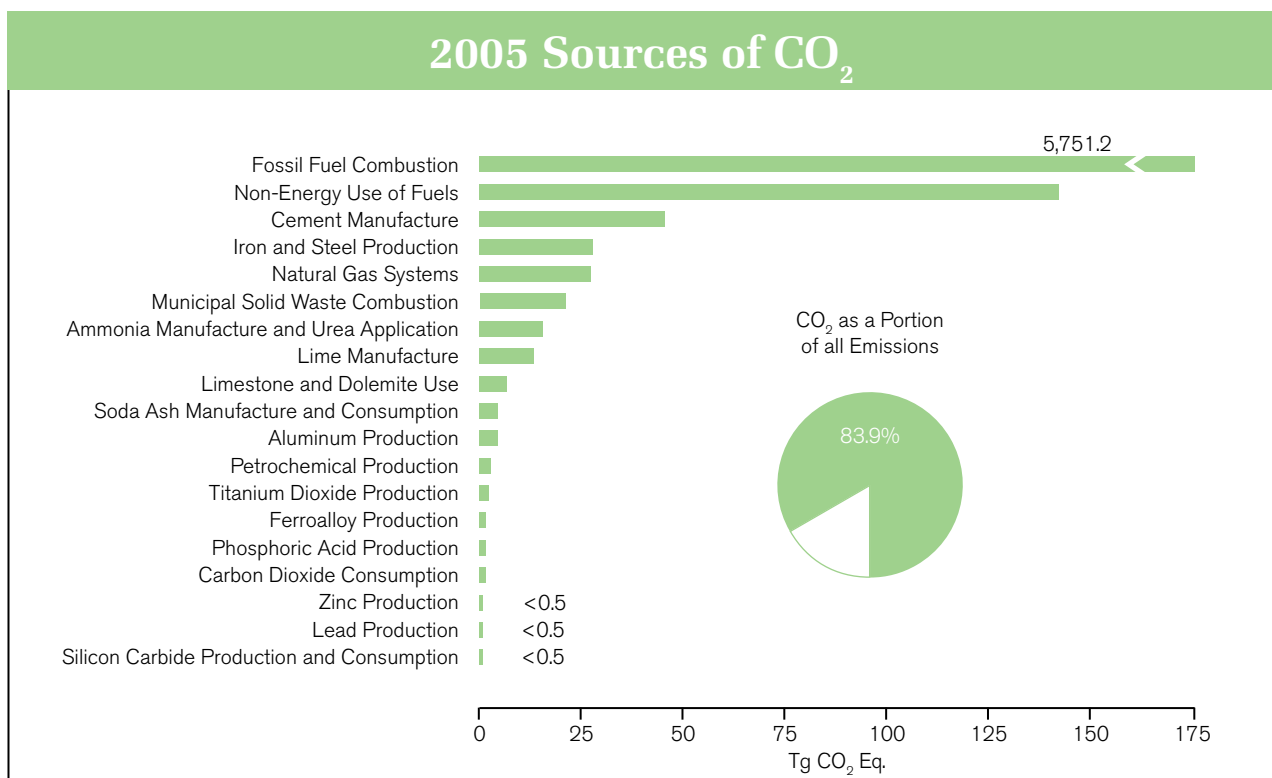
2. Name the three major greenhouse gases and their major sources.

- Carbon dioxide (CO₂)—burning fossil fuels, cement production, deforestation
- Methane(CH₄)—anaerobic decomposition in landfills, natural gas and coal production, livestock, waste-water and manure treatment
- Nitrous oxide (N₂O)—fertilizers (agriculture), fossil-fuel combustion (vehicles), manure and human sewage

Source: U.S. Greenhouse-gas emissions Inventory (y-axis units are teragrams of CO₂ equivalent) epa.gov/climatechange/emissions/co2_human.html.

3. What are some of the impacts of climate change to the Pacific Northwest?

Increased temperatures, increasing winter precipitation, reduction of snowpack due to higher snow levels, earlier spring snowmelt, sea-level rise, and increased fire risk.



HOME-ENERGY USE

4. What are the four primary factors affecting the amount of energy used for heating and cooling a home?

- Desired *temperature*
- Size of *space* to be heated or cooled

- Amount of *time* area is heated or cooled
- *Efficiency* of heating-cooling system

5. Each degree over 67 adds 3 percent to the heating portion of your utility bill. On the other hand, a temperature of 78 degrees saves energy if cooling the home.

6. How do you calibrate a nondigital thermostat?

Place a thermometer in your home (away from the heat source) and note the temperature. Mark the spot on your thermostat dial that brings you to that temperature so you can gauge the ideal spot on the dial for optimum temperatures.

7. How do you calibrate the thermostat in a refrigerator?

Place a container of water in the refrigerator with a thermometer in it. Compare the result to the refrigerator's thermostat.

8. How do you calibrate a water heater's thermostat?

Allow water to reach its hottest temperature and pour water into a container. Place a thermometer in the container to ascertain the temperature, comparing the result to the water heater's thermostat. A good temperature for efficiency and to avoid scalding is 120 degrees.

9. Setting back the thermostat 10 to 15 degrees for eight hours can cut your annual heating bill by 10 to 15 percent.

10. How does a simple fan help reduce home-energy use?

Fans provide air circulation that blows warm air that would normally rise and hover near the ceiling.

11. For improvements in home-energy efficiency, the options are much different for renters than homeowners. What are some improvements in efficiency that would be helpful to both renters and homeowners?

Familiarize yourself with tips to reduce home-energy consumption and make a list of the top ten changes in behavior or improvements in efficiency that will help reduce energy consumption.

- Simple and practically instantaneous changes
- More complex and longer-term changes

12. Which appliance typically consumes the greatest amount of energy in a household?

The refrigerator, particularly if it is a model made more than twenty years ago.

TRANSPORTATION

13. How many pounds of CO₂ does the average vehicle emit per mile?

One pound of CO₂ per mile (20 pounds CO₂ per gallon, 20 miles per gallon)

14. What is the most GHG-intensive form of travel?

Typically, air travel (about one pound of CO₂ per passenger mile— often for longer distances than would otherwise be traveled). Driving can be more intensive if driving alone in an inefficient vehicle.

15. What percentage of total GHG emissions does the transportation sector account for in your state?

In the United States, transportation made up 27 percent of total GHG emissions in 2003, according to the EPA.

16. What simple things can you do to maintain optimum fuel efficiency for your vehicle?

Maintain tire pressure, change oil and filters, and keep the engine tuned.

GREEN BUILDING

17. What are embodied emissions?

Emissions embodied in a product as a result from the manufacturing, transportation, and construction of products.

18. What are some of the components to a green building?

Build for efficiency and durability. Reuse materials whenever possible. Consider the entire life cycle of a product before integrating it into the building plans.

RENEWABLES

19. What forms of energy are considered renewable?

Wind, waves, tidal, solar-electric production, solar water heating and passive solar, small-scale hydro, and biomass are all forms of renewable energy.

20. What are “green tags” and “renewable energy certificates”?

Green tags and renewable energy certificates are terms used to describe the positive environmental attributes produced when renewable-energy generation displaces fossil-fuel generation. The certificates allow consumers to invest in renewable energy through local utilities or independent companies.

21. Do biofuels reduce greenhouse-gas emissions? If so, by about how much for 85 percent ethanol (E85) and 99 percent biodiesel (B99)?

GHG reduction for E85 is about 18 percent, while B99 reduces nearly 75 percent, depending on production method and feedstock.

22. What kinds of vehicles use E85? What kinds use E10?

Flexible-fuel vehicles can use E85 gasoline, while most gasoline-powered cars on the road can use E10.

YARD

23. Name at least three sources of greenhouse-gas emissions associated with yards.

- Gas-powered or electrical lawn mowers, leaf blowers, etc.
- Synthetic fertilizers, pesticides, or herbicides
- Embodied emissions in yard furniture
- Outdoor heaters
- Waste sent to landfills that could be composted on site

24. What is grass-cycling?

Grass-cycling means leaving or spreading the clippings on the lawn or other parts of the yard. The mulch provided by the cut grass decomposes and provides nutrients for your yard and eliminates the need to transport yard waste off-site.

25. Why garden with “low-input” plants?

Low-input plants have adapted to the regional climate of the Pacific Northwest, and they provide an alternative to high-input grass, roses, and other needy plants in landscaping. These plants tend to require fewer fertilizer inputs (which means less fossil fuels used in production and less nitrous oxide released after application) and less summer water.

CONSUMPTION AND WASTE

26. What is the most important step in cutting greenhouse-gas emissions associated with consumption and waste?

Reducing consumption is the first and foremost step in reducing your GHG impact from consumption.

27. What does postconsumer waste mean with respect to recycled materials?

The amount of waste used in the recycled products that come from consumers recycling, as opposed to internal recycling within the manufacturing process.

28. How can people in your area recycle waste associated with electronics or computers?

NextStep Recycling offers local residents the opportunity to recycle their electronics waste for a free or a small fee for certain items like monitors or TVs. They are located at 2101 W. 10th St., Eugene.

29. How can you stop junk mail?

You can sign up at the Direct Marketing Association to reduce the amount of junk mail delivered to your home; 41pounds.org is a nonprofit that stops it for you.

30. What are some important factors to evaluate before making purchases?

Before making large purchases, you should take into consideration the availability of second-hand or refurbished models, the amount of postconsumer recycled material in the product, the reusability and durability of the product, and the toxicity and energy efficiency of the product. Easy, right?

FOOD

31. What is a food mile?

A food mile is the distance that a particular food product traveled before reaching your local grocery store (or your plate if you consider the emissions associated with grocery shopping).

32. Is this the best standard for judging food-related greenhouse-gas emissions?

Food miles provide an indicator of GHG emissions associated with a particular product, but there are many factors to consider. You should also consider the production method (conventional or organic), the amount of processing, the availability of local alternatives, and fair-trade certification (to name a few) when making decisions about food purchases.

33. Are all food miles created equal? Rank the greenhouse-gas impact of food transportation methods.

Different modes of food transport have different GHG impacts associated with them. In order from least to greatest GHG impact: barge, train, truck, and air transport.

34. How does eating organic help reduce a person's carbon footprint?

Organic farming methods require less fossil-fuel inputs because synthesized chemical fertilizers, pesticides, and herbicides are not used in food production. Organic farming may also use less heavy machinery that relies on fossil-fuel inputs. Studies show that organic farming methods allow for more carbon storage in the soil and less nitrous oxide emissions.

35. How does reducing the number of meals produced with meat products and replacing them with plant-based foods reduce a person's carbon footprint?

Many forms of livestock emit methane, and most require feed produced with fossil-fuel-intensive agricultural practices. Instead of feeding livestock grains and soybeans, we can eat those foods ourselves and eat “lower on the food chain.”

36. How can people find out about foods grown in your area?

Local Harvest produces a website that informs local residents about opportunities for purchasing locally grown fruits, vegetables, and meats. Visit www.localharvest.org.

37. What is community-supported agriculture and how can people find out more about it?

Community-supported agriculture consists of a community of individuals who pledge support to a farm operation so that the farmland becomes the community's farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production. Typically, members or “share holders” of the farm or garden pledge in advance to cover the anticipated costs of the farm operation and farmer's salary. In return, they receive shares in the farm's bounty throughout the growing season, as well as satisfaction gained from reconnecting to the land and participating directly in food production. Members also share in the risks of farming, including poor harvests due to unfavorable weather or pests. By direct sales to community members, who have provided the farmer with working capital in advance, growers receive better prices for their crops, gain some financial security, and are relieved of much of the burden of marketing. Local harvest operates a website at www.localharvest.org/csa/ that allows people to locate such farms near their home.

38. Why are there greenhouse-gas emissions associated with eating meat? What about fish?

Livestock production is responsible for 18 percent of the world's human-caused GHG emissions. These emissions come from land-use changes for grazing and feed production, fertilizers, and methane from burping ruminants. Many fish are caught from the deep oceans, requiring huge amounts of fossil fuels for transportation and refrigeration.

D. Presenter Evaluation Forms

Presenter Evaluation

Topic: _____ Presenter Name: _____

What did you like most about this presentation?

What would you change about this presentation?

Should this speaker present to future CM classes?

Presenter Evaluation

Topic: _____ Presenter Name: _____

What did you like most about this presentation?

What would you change about this presentation?

Should this speaker present to future CM classes?

E. Class Evaluation Forms

ANONYMOUS MID-SESSION EVALUATION OF CLIMATE MASTER™ TRAINING

1. Please rate your level of satisfaction with the course so far (circle):

1 (poor) 2 3 4 5 6 7 8 9 10 (outstanding)

2. What is going well for you in the course and why?

3. What is not going well in the course and why?

4. Are the handbook materials easy to understand and presented clearly?

5. What suggestions do you have for improvements in the course?

6. Has the course led you to make any changes in your life to reduce your greenhouse-gas emissions? If so, what changes?

7. What do you want more information on? What information did you need less information on?

8. Does the class time and duration work for you? If not, what suggestions can you offer?

9. Other comments?

ANONYMOUS FINAL EVALUATION OF
CLIMATE MASTER™ TRAINING

1. Please rate your level of satisfaction with the course (circle):

1 (poor) 2 3 4 5 6 7 8 9 10 (outstanding)

2. What went well for you in the course and why?

3. What did not go well in the course and why?

4. What suggestions do you have for improvements in the course?

5. Has the course led you to make changes in your life to reduce your greenhouse-gas emissions? If so, what changes? What aspect of the course led you to action?

6. What do you want more information on? What information did you need less information on?

7. Did the course prepare you to perform outreach activities such as audits and climate consultations? Why or why not?

8. Other comments?

F. Public Service Announcements

You hear so much discouraging news about the environment. How would you like to do something positive—right here, right now? Be a part of the solution. Call [telephone number] and schedule a household consultation. You'll get a personalized action plan. Learn how your household can shrink its climate impact, and you'll wind up saving money *and* energy. Consultations are free! Visit online at [URL]. That's [URL]. You *can* make positive, effective changes at home. Now that's good news!

Do you want to be a part of the effort to curb climate change? Would you like to motivate others to do the same? Then you should join the Climate Master[™] program! The low-cost Climate Master[™] program provides thirty hours of training on cutting your household's climate impact in exchange for thirty hours of volunteer outreach efforts. Call [telephone number] for more information.



G. Volunteer Commitment Form

VOLUNTEER GUIDELINES

Program Goal Statement

The Climate Master™ program strives to bridge the gap between awareness and action by providing education on climate change and emission-reduction strategies as well as volunteer opportunities to citizens concerned about climate change and about their role in the solution.

Volunteer Opportunities Agreement

Climate Master™ receive free education on climate change and action strategies. However, before the class begins, each climate master signs a contract that requires a minimum of thirty volunteer hours by [date]. If these hours are not met, the climate master is charged [dollar amount] for course materials and training.

Volunteer Opportunities Guidelines

Volunteer activities must provide climate change action education.
In addition, volunteer opportunities may

- be created by the volunteer (and approved by the Climate Master™ coordinator before it counts as credit to volunteer opportunities)
- already exist, i.e. monthly or annual events
- be created by the Climate Master™ coordinator

Tracking Volunteer Hours

As stated above, Climate Master™ must complete thirty hours of volunteer time to earn their “master’s degree.” **You are required to track your hours and record them on a Volunteer Hours Log Sheet.** These hours should be submitted to the Climate Master™ coordinator monthly.

Statement of Commitment:

My signature below signifies that I will complete thirty hours of volunteer education and outreach by [date]. If I am unable to complete those hours, I will pay [dollar amount] for the cost of training and the materials provided.

Name (Printed)

Signature

Date

Please check all that apply:

- I am interested in performing household audits
- I would like to team up with households over the course of the year
- I would like to do public speaking
- I would like to publicize events or the auditing program by canvassing neighborhoods
- I would like to table at events

(see reverse)

Please mark your volunteer availability below:

Day	Time	Yes/No	Time	Yes/No	Time	Yes/No
Monday	9:00 a.m.–noon				5:00–8:00 p.m.	
Tuesday	9:00 a.m.–noon				5:00–8:00 p.m.	
Wednesday	9:00 a.m.–noon				5:00–8:00 p.m.	
Thursday	9:00 a.m.–noon				5:00–8:00 p.m.	
Friday	9:00 a.m.–noon				5:00–8:00 p.m.	
Saturday	9:00 a.m.–noon				5:00–8:00 p.m.	
Sunday	9:00 a.m.–noon				5:00–8:00 p.m.	

Have you ever been convicted of a crime or offense other than a minor traffic violation?

(Yes/No) _____

If so, when and what? _____

On a Lighter Note

If you are willing to join your fellow climate masters in taking one or more actions each week of the course to reduce your climate footprint, please sign below:

I _____ will take one greenhouse-gas-emission reducing step each week of the Climate Master™ course.

H. Consultation Material Templates

CHECKLIST FOR CLIMATE MASTER™ CONSULTATIONS

Preconsultation

Plan to travel by bike, public transportation, or foot to the consultation. If you are unable to do so, please try to carpool. If we can't avoid automobile use during energy conservation consultations, who can?

Arrive five minutes early.

Materials Needed for Consultation

- This checklist
- Survey (return to [designated person])
- Consultation worksheets (leave with household)
- Master checklist (leave with household)
- Two Personal Action Plan forms (Both signed: leave one, return one to [designated person])
- Brochures on area of interest (home energy, yard, etc.)
- Items to install with homeowner: light bulbs, shower heads, etc.
- For home emission consultations:
 - Meat thermometer (for water temperature check)
 - Refrigerator thermometer (for refrigerator temperature check)
 - Wall thermometer
 - Plastic bag marked with volume measures (for water flow)
 - Stop watch
- Pen or pencil
- Flashlight

During the consultation

1. **Introduce yourselves and the Climate Master™ program.**
2. **Double-check their area of greatest interest for the consultation.**
3. **Administer survey and get utility release forms signed (if applicable). These are voluntary, but will help us identify effective outreach strategies.**
4. **Proceed through consultation worksheets for areas of greatest interest. Give resident a master checklist and worksheets so they can follow along with you.**
5. **At some point during consultation, discuss priority areas for emission reduction:**
 - Transportation: Reducing flights and car trips
 - Home heating, cooling, and water heating
 - Consumption and embodied emissions
6. **Secure commitment** for one or more changes; get two copies signed.
7. **Leave any resources** that resident is interested in.

After the consultation

- Return completed survey and one action plan to the following (drop SASE in mailbox on way out of the home):
 - [Name, address]
- Return unused materials
- Record your volunteer hours on your timesheet

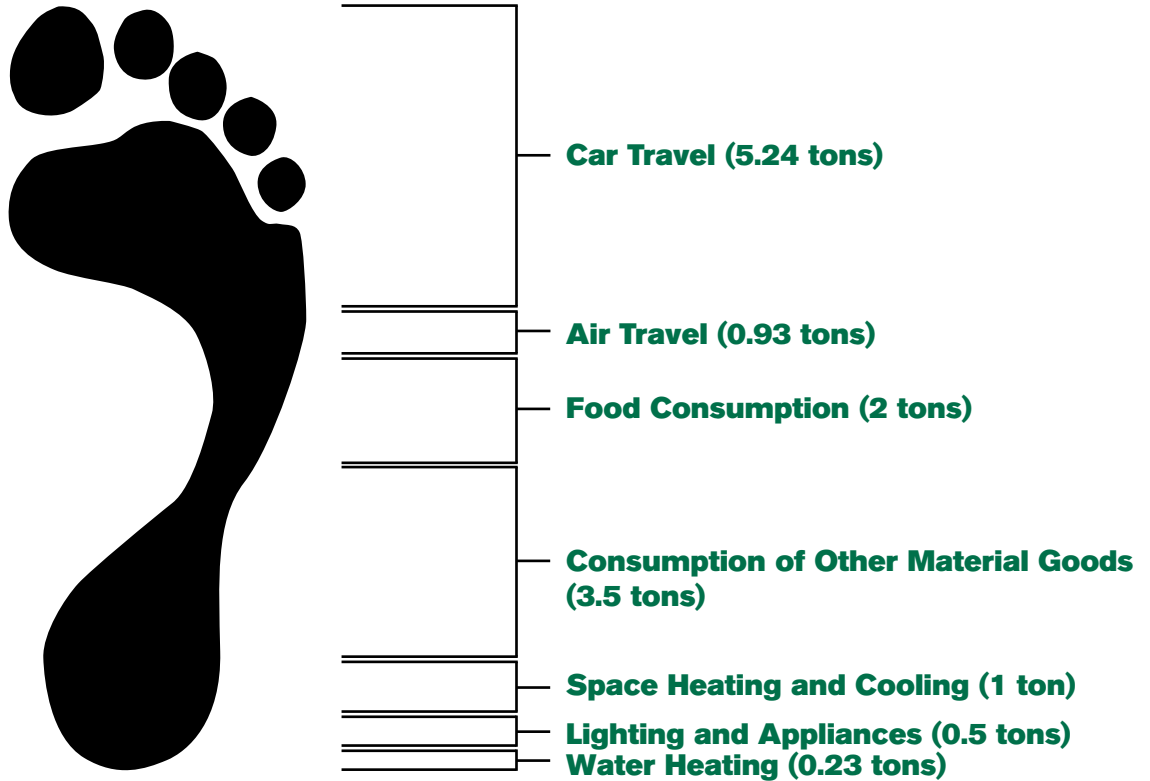
I. Personal Action Plan (Tailor This to Your Community)

Name _____

Phone _____

You *can* make a difference in reducing your personal greenhouse-gas emissions!

Approximate Total Personal CO₂e Emissions for a Typical Eugene Resident



To reduce my personal emissions I will do the following:

1. _____
2. _____
3. _____

Participant: _____ Date: _____

Emissions advocate: _____ Date: _____

Areas I'm thinking about changing in the future:

1. _____
2. _____
3. _____



HOME CONSULTATION WORKSHEET

(ADAPT TO YOUR COMMUNITY)

Section 1.0 Home

Home-energy use accounts for nearly half of our personal greenhouse-gas emissions. Most of that energy goes towards space heating, water heating, appliances, lighting, and cooking, typically in that order, although it varies from household to household.

With one-third of Oregon's total electricity usage going toward residential use and the average Eugene resident consuming approximately 12,000 kilowatt-hours per year, homes constitute a substantial portion of our greenhouse-gas (GHG) emissions. With impending climatic change and increasing energy costs, the payoffs for increased home-energy efficiency make more and more sense. In addition to the initial monthly energy bill savings, a variety of income tax incentives are provided on local and state levels to encourage home-energy efficiency improvements.

Updating appliances and weatherizing your home can considerably improve energy efficiency, but simple behavioral changes can also significantly reduce energy consumption and therefore greenhouse-gas emissions. Turning off the heat at night or when you're out of the house, washing clothes with cold water, and avoiding leaving electronics on standby will also affect household GHG emissions.

Section 1.1 Home Heating and Cooling

INFORMATION TO GATHER DURING A CONSULTATION

1. How many hours per day is the house occupied?
2. What are you already doing to save energy at home?
3. Do you have an outbuilding, sump pump, hot tub, floodlights, plug-in wheel chair, or other item that might use a lot of energy?
4. What is the biggest energy user in your household?
5. How hot or cold is the house?
6. Where are the cold spots? Hot spots?
7. Is furniture blocking vents or heaters?
8. What sort of heating equipment is used?
9. How efficient is the unit?
10. Is the heating system zoned?
11. Is the heated area of the house well sealed?
12. What sort of cooling system is used?
13. How efficient is the unit?
14. Is the air conditioning system zoned?
15. Is the air-conditioned area well sealed?
16. Does the house have a wood-heating source?
17. Is the house well insulated and/or weatherized?
18. Are the windows energy efficient (newer, double-paned) or do they have storm windows?

RECOMMENDATIONS: HEATING AND COOLING

1. **Turn down the heat.** For every degree that you heat your house over 67°F, you add 3 percent to your heating bill. For example, turning the heat down from 72°F to 67°F can save you \$123 and cut 1,575 pounds of CO₂-equivalent from your GHG emissions per year.

2. **Turn up the A/C.** The air conditioning energy saving setting is 78°F or higher. Each degree lower *adds* 3 percent to your cooling bill while each degree higher *subtracts* 3 percent from your cooling bill.

3. **Turn the heat down when out you are out for the day or sleeping.** This can save up to \$444 and cut a massive 5,670 pounds of CO₂-equivalent from your GHG emissions *each year*. To help you with these measures, you can get a programmable thermostat or calibrate the thermostat yourself.

4. **Zone heating.** Heat only the room that you are using.

5. **Wood heating.** A wood stove is five times more efficient than a fireplace.

- The chimney is a huge heat funnel; it acts like an hole in the wall, twice the size of the chimney's throat. If you must use a fireplace, install glass doors and close the damper when not in use.
- Avoid using the fireplace and a gas or electric heater simultaneously. Fire needs oxygen to burn, so it will draw cold air through the cracks and leaks in your house in order to have sufficient oxygen.

6. **Seal air leaks.** In an average home, air leaks are equivalent to leaving an average-sized window open. Install weather stripping, outlet insulators, insulating foam, window putty, and door sweeps to save \$222 per year and cut 2,835 pounds of CO₂-equivalent from your GHG emissions per year.

Find more information on caulking and weather stripping online at the U.S. Department of Energy website: www1.eere.energy.gov/consumer/tips/air_leaks.html.

7. **Insulating** reduces the loss of up to 60 percent of the energy you use to heat your home. Much escapes through parts of the house that can be insulated (walls, ceiling, and floor). Attic insulation can save 20 to 35 percent in heating costs.

- EWEB's Home Comfort Program provides home-energy information and energy-use education. The program also offers loans and incentives to implement upgrades in efficiency. Call (541) 484-1125 to request more information or visit www.eweb.org/home/energy/windows.
- See the list of EWEB's qualified contractors in this packet.
- **Weatherization** services are provided by the Housing and Community Services Agency of Lane County. The weatherization program assesses homes for weatherization needs, installs insulation and windows, and seals heating ducts for income-qualified Lane County renters and homeowners (including mobile homes). Call (541) 682-3999 for waiting list information.

8. **Maintain and optimize your furnace and heating-cooling system.** In some cases, as much as 50 percent of the energy used in the furnace is wasted.

- Have your **electric furnace tuned** every year. This can save \$53 annually and cut 677 pounds of CO₂-equivalent from your GHG emissions each year.
- EWEB offers discounts towards heat-pump maintenance from qualified contractors.
 - Contact EWEB at (541) 484-1125 for more information or visit www.eweb.org/Home/Energy/heat_pump_maint.
- **Seal and insulate all air heating ducts.**
 - Contact EWEB at (541) 484-1125 or visit their website at www.eweb.org/Home/Energy/heating/index.htm.
- Avoid **blocking vents and heating units** with furniture for better air flow.
- Use a **fan to circulate the air and redistribute the heat.**
- Clean or **switch your filters monthly** for forced air systems.

9. **Windows.** For an average-size home built in the 1970s with electric heating, switching from single-paned to double-paned windows will save approximately \$152 and cut 1,744 pounds of CO₂-equivalent from your GHG emissions annually. Triple-paned windows make for further savings.

- As an alternative, **add storm windows or plastic wrap** to single-paned windows.
- Close **curtains or blinds** during cold nights to trap heat or on hot days to block sunlight.
- Thick **drapes** will keep your house warmer than thin ones.

10. **Cool with a fan** instead of an air conditioner.

11. **Buy an energy-efficient heating system** if purchasing a new one to reduce costs and emissions in the long run. EWEB offers \$1,000 rebates and no-interest loans on **heat pumps**. More information on the Centisble Heat program can be found by contacting EWEB at (541) 484-1125, or visit their website at www.eweb.org/Home/Energy/heat_pumps.

12. **Work with the sun.** Allow sunlight to warm your house in the winter by opening curtains and blinds. Block out the sun with curtains and blinds during hot summer days to keep your house cooler.

13. **Buy renewable energy** from your utility or, if you've done everything to gain efficiency, consider installing solar photovoltaic panels to produce energy at home.

RESOURCES: HEATING AND COOLING

1. Home Energy Calculator from Emerald People's Utility District: epud.apogee.net/homesuite/frame-maker.aspx?url=/rescalc.
2. Comfort Stat program from EWEB, with information and financing for electronic thermostats: www.eweb.org/home/energy/thermostat.
3. Tips for sealing air leaks from the U.S. Department of Energy: www1.eere.energy.gov/consumer/tips/air_leaks.html.
4. Home Comfort Program (EWEB), with information, incentives, and financing for home-energy use and energy saving and efficiency measures: www.eweb.org/home/energy/windows.
5. Information comparing different electric heating systems (EWEB): www.eweb.org/home/energy/heatsheets/index.htm
6. Information, incentives, and financing for heat pumps (EWEB): eweb.org/home/energy/heat_pumps.

Section 1.2 Water Heating and Use

Water heating typically accounts for 15 percent of household energy consumption and is therefore the second-greatest source of household emissions. Have you ever had to rush out of the shower because the hot water ran out? When the "quick recovery" feature on the common water heater flips on, the energy consumption nearly doubles. Behaviors like taking shorter showers, avoiding filling your bathtub with hot water, and turning the faucet off while brushing your teeth or shaving can save unnecessary emissions and wasted money. Add a few physical improvements, such as insulation on the first few feet of pipe leading to your water heater and a blanket around the heater itself, and you'll see significant changes in your next bill.

INFORMATION TO GATHER DURING A CONSULTATION

1. The type of water heater (storage, instantaneous or on-demand) and fuel used (electricity, gas, solar). If it's a gas heater, does it use a pilot light?
2. How hot is the water?
3. What is the location and age of the tank?
4. How well is the tank insulated?
5. What is the delivered hot water temperature? (This can be tested by running the hot water over a thermometer. Go to the furthest point in the house from the heating system).
6. Which pipes, if any, are insulated?
7. What is the length of plumbing from the water heater unit to the bathroom, kitchen, laundry room, etc?
8. What are the flow rates in the shower, laundry room, and kitchen? (To test, use a bucket or bag and a stop watch).

9. How does your household use hot water (particularly for clothes washing and dish rinsing)?
10. What is the amount of energy used? (This may be gathered from recent power bills.)

RECOMMENDATIONS: HOT WATER

1. **Showering.** A ten-minute shower uses approximately fifty gallons of hot water. Heating this water emits six pounds of carbon dioxide.
 - Shoot for a **five-minute** scrub (instead of ten).
 - Install a **low-flow shower head**. Each of these options saves \$43 per year and cuts 494 pounds of CO₂-equivalent from your annual GHG emissions.
 - Information on low-flow shower heads and aerators can be found at www.energycoalition.org/energy_tips/water.pdf.
 - Purchase shower heads and aerators at any hardware store.
2. **Water heater.** Most heaters are programmed at 140°F and can easily be **decreased to 120°F**. This can save \$14 annually and cuts 162 pounds of CO₂-equivalent from your annual GHG emissions.
 - Add an **insulation blanket** to older electric units that feel warm to the touch. Insulating a new one can fry the heater. See resources below for instructions.
 - Add **foam insulation sleeves** to the first five feet of pipe running from the unit.
 - Turn **off your water heater** while you're on vacation or even while you're asleep and at work. Turn it off at the circuit breaker or install a switch. Switches can be installed with timers, so you don't have to remember to turn it on and off.
3. **Turn off the tap.** Stop sending clean water and money down the drain by running the tap while doing dishes, brushing your teeth, and shaving. While you're at it, use cold water for these activities for greater savings.
4. **Check for leaks** around faucets, clothes washers, and water heaters.
5. **Install a solar water heater.** Although costly to install, a solar water heating system can save a household 50–80 percent on the water-heating bill. As prices for electricity or natural gas go up, the savings increase. Annual emissions savings range from 2,700 to 4,320 pounds of carbon dioxide.
 - EWEB's Bright Way to Heat Water program offers incentives for solar water heating system. Call (541) 484-1125 or visit www.eweb.org/Home/Energy/solar/index.htm.
 - The Oregon Department of Energy also offers residential and commercial incentives for installing solar water heaters. Visit oregon.gov/ENERGY/RENEW/Solar/Support-RETC.shtml.

RESOURCES: HOT WATER

1. Energy-Efficient Water Heating (U.S. Department of Energy). Instructions on how to lower temperature, install an insulating blanket, timer, and more: www.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=13030

Section 1.3 Appliances

There are dozens of simple and cost-effective alterations you can make regarding your appliances that will significantly reduce your impact on global climate change.

INFORMATION TO GATHER DURING AN AUDIT

A, B. Refrigerators and Freezers

1. The number of refrigerators and freezers in the house.

2. How regularly each is used (e.g., how full are they, how often do the households access them, are they used regularly or for special events).
3. The approximate age of each refrigerator and freezer.
4. The location of each refrigerator and freezer: is it in a cool or warm location, does it get direct sun, and is it well ventilated at the back, sides, and top?
5. The condition of each refrigerator and freezer: quality of the seals, is there frost buildup inside, dust buildup on the coils?
6. The temperature inside each refrigerator and freezer and how full they are.
7. What is the size, energy use, and energy efficiency (“Energy Star” rating) of each unit?

C, D. Dryer and Washing Machine

1. What type of washing machine?
2. Do the units have an “Energy Star” rating?
3. What water temperature is usually used?
4. What cycle is usually selected?
5. How often are the units used?
6. What sort of clothes dryer?

E. Dishwashers and Hand-washing

1. Is there a dishwasher?
2. Does the unit have an “Energy Star” rating?
3. How often is it used?
4. What cycle is it usually operated on?
5. What temperature is the water usually set to?
6. If you hand-wash, do you wash and rinse with hot or cold water?
7. Do you use tubs to hand-wash? If not, do you leave the water running?

F. Power Strips and Surge Protectors

1. Are electronics plugged into these?
2. Which electronics and appliances are phantom power users?
3. Are they easily accessible?
4. Do you turn off the power strips when electronics are not in use?

RECOMMENDATIONS: APPLIANCES

A. Refrigerator

1. **Replace inefficient models.** For refrigerators older than 2001, Energy Star models are roughly 40 percent more energy efficient. Depending on use, the average household will save 540 pounds of carbon dioxide per year.
 - *Home Energy* magazine’s website evaluates the energy efficiency of your refrigerator model. Their website can be accessed at www.homeenergy.org/consumerinfo/refrigeration2/refmods.php
 - The Energy Star program offers an informative website on energy-efficient appliances, home improvement, and commercial and residential building at www.energystar.gov/
 - The Oregon Department of Energy offers incentives to Oregon residents who purchase energy-efficient Energy Star products. More information about their incentive program can be viewed at oregon.gov/ENERGY/CONS/RES/RETC.shtml.
2. **Set the temperature** between 38 and 42 degrees Fahrenheit. Use a thermometer in a glass of water to calibrate.
3. **Locate** away from heat sources.

4. **Clean vacuum coils** (on back or underneath). When they're dirty, the refrigerator comes on more often and runs longer. Be sure to unplug it first.
5. **Clean the gasket** and the area around the gasket where the door seals. It's easy to replace. **Use a dollar bill to test the seal.**
6. **Cool food** before putting it in the fridge. This reduces the amount of work the refrigerator has to perform.
7. **Keep the refrigerator full**, even if just with full water jugs. Solid mass stays cold more easily than air.
8. **Get rid of your second refrigerator or freezer. Consolidate food** into one unit. If it is not possible to get rid of a unit, then **unplug seldom-used units**. These energy hogs of the appliance world can cost \$100 a year.

B. Freezer

1. **Set the temperature** between zero and 10 degrees Fahrenheit for product (not air temperature). Use a thermometer packed in frozen foods for reading the temperature accurately.
2. **Keep the freezer full**, even if just with full water jugs.

C. Dryer

1. **Clean the lint trap each time you run the dryer.** This results in a 5–10 percent reduction in energy use. Excess lint is also a fire hazard.
2. **Replace vent cover** with louver type. This results in a 20–50 percent increase in airflow, taking less energy to force air through.
3. **Don't overload the dryer.**
4. **Sort loads** by clothing weight and material type.
5. **Line-dry your clothes.** Use the sun's natural warmth to save energy.

D. Washing Machine

1. Use the appropriate settings and water level for the load size.
2. Wash clothes in **the cold water cycle** (or at least rinse in cold water).
3. **Minimize detergent used.** The motor works harder with extra suds.
4. **Run washer with full loads** (don't run partial loads).
5. Use an extra spin cycle to reduce the time needed for running the dryer.
6. Use eco-friendly (nonpetroleum-based) detergent and soap.

E. Dishwashers and Hand-washing

1. Select **air dry** or turn off and open door.
2. **Run full loads.**
3. **Use tubs or fill the sink** for hand washing, rather than constantly running the water.
4. **Use cold water to rinse dishes.**

F. Power Strips and Surge Protectors

1. **Switch off electronics and appliances** at the wall or power strip to cut 5–10 percent of your electric bill spent on standby power. Clocks and lights on TVs and stereos constantly use power unless unplugged. Power strips make it much easier to accomplish this but appliances and electronics can also simply be unplugged when not in use. The basic rule of thumb is this: if you can see it on (standby light, clock) or feel it on (heat coming from wall chargers), then it's considered a "phantom power user" because it is constantly drawing electricity, even when turned off.

Section 1.4 Lighting

Our habits concerning the lighting in our homes are some of the smallest changes we can make toward reducing our greenhouse-gas emissions but they can add up!

INFORMATION TO GATHER DURING A CONSULTATION

1. How many lights are in use for more than two hours each day?
2. Of these lights, how many are fluorescent?
3. Of these lights, how many are low wattage?
4. Are there dimmer switches anywhere in the home?
5. Are there motion-sensing lights outside?
6. Do you leave your porch light on?

RECOMMENDATIONS: LIGHTING

1. Replace incandescent light bulbs with compact fluorescents. Each bulb can save 100 pounds of carbon dioxide a year and will cut your lighting costs. Use them in almost any fixture and experience the improved quality of light. Purchase at any hardware or lighting store.

2. Turn off lights when you leave a room to save money and cut emissions.

3. Use task lighting instead of lighting an entire room.

4. Use **dimmer switches** when full intensity lighting is not needed.

5. Take advantage of **natural light** during the daytime.

6. Put outdoor lights on a **motion sensor** or use **solar lights**.



TRANSPORTATION CONSULTATION WORKSHEET

(ADAPT TO YOUR COMMUNITY)

Section 2.0 Transportation Introduction

In Eugene, transportation accounts for about half of a household's greenhouse-gas emissions, depending on how much one flies and drives.

The average Oregonian drives about 12,000 miles per year, using 500 gallons of gasoline and emitting over five tons of carbon dioxide a year. The main way to reduce these emissions is to reduce the number of miles driven in your car: use public transit, cycle, or simply walk. This not only benefits the environment but saves money and is good for your health. Also, using public transit can result in savings on fuel and car maintenance, and often means you do not have to walk as far to your destination as you might have to walk from your parked car. Other ways of reducing your emissions from transport are by increasing the efficiency of your car, and through fuel-efficient driving.

Air travel has become a major part of the modern world, but few people know about the high greenhouse-gas emissions associated with it—not only the carbon dioxide emissions from burning fuel but other greenhouse-gas emissions such as nitrous oxide, and the creation of contrails. In addition, the emissions from airplane travel carry about twice the negative impact of other emissions, because they are released high in the atmosphere. Therefore, for every passenger-mile traveled by air, one pound of greenhouse gas is emitted (compared to 0.42 pounds carbon dioxide per passenger-mile by bus, 0.35 pounds carbon dioxide per passenger-mile by a train, and one pound carbon dioxide per passenger-mile by car).

Section 2.1: Reducing Vehicle Miles Traveled

INFORMATION TO GATHER DURING A CONSULTATION

1. How many automobiles are shared by the residents in your household?
2. How many miles were traveled by cars in your household this week? Alone or with passengers?
3. How many public transport trips were taken?
4. How many trips were walked or cycled?
5. To which mode are you most likely to switch from driving alone?
6. What are some barriers or obstacles to the preferred alternative mode?

RECOMMENDATIONS: REDUCING VEHICLE MILES TRAVELED

Reduce vehicle miles traveled (VMT)—with planning, most people can achieve reductions of 20 percent or more, a savings of 1,650 pounds of carbon dioxide.

- 1. Take public transit**, walk, or cycle at least twice a week
 - LTD offers tips and recommendations on routes at (541) 687-5555 or at www.ltd.org.
 - The City of Eugene offers bicyclists a map of bike paths in our area. This map could be useful in planning your route to work, to school, or in running errands. The link to this map is www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_11283_0_0_18/EugeneMap.PDF.
- 2. Work from home**; try telephone and teleconferencing.
- 3. Carpool** with your family, other parents, friends, and neighbors. Commuter Solutions is a community service that provides local residents with a network of commuting options, including carpools, vanpools, and employee-commuting programs. Commuter Solutions is available by telephone at (541) 682-6100 or on the web at www.nextsteprecycling.org.
- 4. Run errands less often** by buying bigger quantities and combining trips; this can reduce weekly VMT by 50 percent.

5. **Walk or cycle** when running errands nearby

6. **Plan weekend and social activities closer to home.** Leisure travel is increasing, so instead get an extra workout by biking or walking to the gym.

Section 2.2: Maintain an efficient car

INFORMATION TO GATHER DURING A CONSULTATION

1. Are your vehicles tuned regularly?

RECOMMENDATIONS: MAINTAIN AN EFFICIENT CAR

Maintaining an efficient car can improve fuel efficiency by as much as 30 percent.

1. **Checking the tire pressures regularly** and inflating as needed saves as much as 3 percent of fuel

Most gas stations have tire gauges, and tire retailers and mechanics are also available to help you check your tire pressure.

2. **Changing the air filters regularly** saves as much as 10 percent of fuel.
3. **Keeping the engine tuned** saves as much as 4 percent of fuel.

Section 2.3 Fuel Efficient Driving

INFORMATION TO GATHER DURING A CONSULTATION

1. Do you know the miles per gallon of your vehicles?
2. Do you use a roof rack or carry materials in your vehicle?

RECOMMENDATIONS: FUEL-EFFICIENT DRIVING

1. Use the most **fuel-efficient** vehicle you own.

- **Fuel Economy.gov:** www.fueleconomy.gov/feg/factors.shtml allows you to see how your car's miles per gallon compares to others.

2. **Warm up the engine by driving;** it's better for the car than stationary warm ups and results in fewer emissions.

3. **Plan your route** to avoid idling in traffic; idling for more than ten seconds uses more fuel than restarting your car.

Envisioning the layout of the Eugene-Springfield area may help you plan a more efficient route for running errands. The LTD map shows major streets in the region and can help you navigate your way around town. The map is available at [www.ltd.org/pdf/routes/2007 percent20System percent20Map.pdf](http://www.ltd.org/pdf/routes/2007%20System%20Map.pdf).

4. **Rid your car of unnecessary weight and remove the roof rack.** You lose 1 percent fuel efficiency for every extra 100 pounds you carry. Roof racks reduce the aerodynamics of your vehicle, so take it off when not in use.

5. **Maintain a steady speed** on highways and drive at 55 miles per hour—the most fuel-efficient highway speed

6. **Accelerate and brake steadily.**

7. **When buying a new car,** investigate the following:

- a. Check fuel-economy labels and buy the most efficient vehicle possible.

- **Fuel Economy:** www.fueleconomy.gov for comparison of vehicle efficiencies.

- b. Use alternative fuels: 85 percent ethanol in a dual-fuel car reduces carbon dioxide emissions by as much as 18 percent, and hybrid cars reduce them by as much as 30 percent, whereas diesel cars that run on 100 percent biodiesel can save 75 percent of CO₂ emissions.

- Flexible-fuel statistics and information can be found online at [www.e85fuel.com/e85101/flex fuelvehicles.php](http://www.e85fuel.com/e85101/flexfuelvehicles.php).

- The U.S. Department of Energy offers information for consumers interested in biofuels at www.eia.doe.gov/oiaf/analysispaper/biodiesel/index.html.

Section 2.4: Air Travel

INFORMATION TO GATHER DURING A CONSULTATION

1. Are you familiar with the impact of plane travel? Many people believe plane travel is equivalent in emissions to public transportation, while it is actually significantly higher.
2. How often do members of the household fly (approximate miles per year)?
3. Is it possible to travel by other means or avoid these trips?

RECOMMENDATIONS: AIR TRAVEL

1. **Cut one 5,000 mile round-trip** (i.e., Eugene to the East Coast) by air and reduce your greenhouse-gas emissions by one-and-a-half to two tons per person.
2. **Travel 1,000 miles** (i.e., Eugene to San Francisco) **by train, not air**, and save one-quarter ton of greenhouse-gas emissions per person.
3. **Have business meetings over the phone or the Internet** instead of traveling long distances.
4. **Plan a vacation close to home.** Find new adventures in your area.



FOOD CONSULTATION WORKSHEET

(ADAPT TO YOUR COMMUNITY)

Section 3.0 Food

Introduction

The Environmental Protection Agency's most recent GHG inventory shows that agriculture accounts for a whopping 7.4 percent of emissions in the United States. And that does not even account for food-related transportation, manufacturing, storage, and cooking, nor the emissions from producing the food we import from other countries. Modern agriculture relies on large inputs of fossil fuels in all levels of food production and distribution: plowing and fertilizing fields; transporting crops to storage or distribution centers; storing, processing, and packaging; and transporting to the consumer's home (where further energy is used to store and prepare the food). At every stage of this process, food is wasted and thrown away; those emissions were for naught.

GLOSSARY OF TERMS

Food miles = The distance and mode of transportation involved in moving your food from its point of production to your home. These miles, of course, have greenhouse-gas emissions associated with them. Don't be fooled into thinking distance is the only consideration. Food shipped from across the world might result in fewer emissions than food flown from a closer point.

Organic = Food that is grown without the use of chemical pesticides, fertilizers, herbicides, or growth hormones. Any type of food can be grown and produced organically, including fruits, vegetables, meats, dairy products, and grains.

INFORMATION TO GATHER DURING A CONSULTATION

1. Do you know how your food choices affect your contribution to greenhouse-gas emissions?
2. Are you familiar with the terms "food miles" and "organic"?
3. Do you know where your food is produced?
4. Where do you prefer to shop?
5. Do you have a garden or other home food sources?
6. How much meat do you eat (if any)? Which types of meat? Is it organic?
7. How much organic food do you eat (if any)?
8. How much processed food do you eat (if any)?
9. Are the oven and stove in good working order? (See no. 6 below)
10. Are you aware of the efficient food-cooking tips below? (See no. 6 below)

RECOMMENDATIONS: FOOD

1. **Reduce your food miles** by buying local and in-season foods. The average meal travels 1,500 miles from the farm to your plate, burning fuel and emitting greenhouse gases all the way. Many foods also must be refrigerated or kept frozen as they travel. By eating food that is in-season in Oregon, we increase the chance of finding that product grown locally without major fossil fuel inputs to warm the soil and the plant. However, in some cases, food can be produced more efficiently elsewhere, making up for the transportation emissions.

- **Willamette Food and Farms Coalition** publishes the Lane County Food Directory, which provides sources of locally grown foods as well as restaurants that emphasize local foods in their menus.

Visit the online directory at www.lanefood.org/content/cp-3-fooddirectory.htm.

- Community-supported agriculture offers a way for you to support your local farmers and enjoy locally grown produce at the same time. Find one through the Food Directory, www.localharvest.org, or ask farmers at market if they provide food boxes for an up-front fee.
- **Avoid food that traveled by plane.** This food emits more greenhouse gases than food traveling by rail, truck, or ocean barge. The transportation emissions are fifty times greater to fly a pineapple from Hawaii versus shipping one from Costa Rica. Ask at your local market for this information.
- **Walk or ride your bike** to buy groceries. Riding the bus, carpooling, and combining errands are other ways to reduce these emissions. This leg of your food's journey from farm to your house can be the least efficient in its life cycle, since we don't pack our personal vehicles as efficiently as the trucks, boats, and trains that transport food to the store.

2. **Grow your own food.** This can save up to one ton annually of CO₂-equivalent emissions. Greenhouse-gas emissions from food come from fertilizers, machinery, transport, refrigeration or freezing, processing, and packaging.

- OSU Extension Service's Master Gardener website offers a gardening encyclopedia and monthly gardening calendars to help answer many of your gardening questions. The *Gardening Encyclopedia* is available on the web at extension.oregonstate.edu/gardening/ and the monthly calendars are at extension.oregonstate.edu/gardening/calendar/.
- *Eugene Weekly* publishes a *Spring Planting Guide* to help organize your planting schedule—and it's focused on foods that grow well in the Willamette Valley. Past issues of the planting guide are available online at www.eugeneweekly.com/2007/03/08/springplanting.html.

3. **Eat less meat.** Eating just *one* less quarter-pound hamburger per week saves 0.33 pounds of methane just for the meat alone. Methane has a global warming potential twenty-one times greater than that of carbon dioxide. Cutting one burger per week reduces your annual GHG emissions by 360 pounds of CO₂-equivalent annually.

4. **Buy organic food** when you can. Organic farming uses one-third less fossil fuels than conventional farming; it increases soil carbon content from 15 percent to 28 percent, and organic soil retains up to 30 percent more nitrogen than conventionally farmed soils. (This includes **organic meat**. Animals raised organically don't ingest manufactured chemicals, hormones, or antibiotics—similar to organic produce.)

5. **Buy fewer processed foods.** 2.5 percent of total fossil-fuel energy used in the world is consumed for food packaging. Eating less processed foods will benefit your health as well, as such foods tend to be high in sugar and sodium.

6. **Cook food more energy efficiently**, using the following tips:

- Test the oven's thermostat to make sure it's accurate.
- Clean the reflectors under the top burners so they reflect more heat.
- Clean the seal around the oven door and check for cracks.
- Don't open the oven door frequently when cooking; the temperature drops 25–50°F each time the door is opened.
- Use glass or ceramic baking dishes and reduce the oven temperature by 25°F.
- Thaw foods in the refrigerator rather than the microwave.
- Use the lowest heat setting to maintain boiling.
- Let food cool before putting it in the refrigerator.
- Don't preheat the oven for more than ten minutes.
- Cook with the lids on pans. This saves as much as two-thirds of the energy.
- Put extra coffee into a thermos instead of leaving the coffee maker on.
- Use a microwave instead of a stove whenever possible. This can save up to \$47 annually for the average household and cut your GHG emissions by 594 pounds per year.
- Cook larger amounts of food at one time, then use a microwave to reheat.

7. **Plan shopping trips and the number of trips out of the house as efficiently as possible.** This can include combining trips for multiple errands and driving the fastest route possible. The less times you drive, the less your carbon dioxide emissions will be.

- **Bring your own bags** when you shop. This will reduce or eliminate the need to take home plastic or paper bags from the store, which emit GHGs in their production and transportation.

8. **Avoid bottled water.** Bottled water uses unnecessary resources, including plastic bottles, other packaging, production, and transport. It also creates unnecessary waste. If the water in your area is not suitable to drink, either for quality or taste, buy a water filter. This can be as simple as an attachment for your faucet or a filtering pitcher to keep in your fridge.

RESOURCES: FOOD

1. Information on where to find local foods and many other community food resources (including the Lane County Food Directory, distributed by the Willamette Food and Farms Coalition) can be found online: www.lanefood.org/content/cp-3-fooddirectory.htm.

2. Local Harvest (community-supported agriculture): www.localharvest.org/csa/.

3. General information on gardening, food, and associated education: www.lifecyclesproject.ca/.



CONSUMPTION AND WASTE CONSULTATION WORKSHEET

(ADAPT TO YOUR COMMUNITY)

Section 5.0 Consumption and Waste Reduction

Introduction

As consumers in a fast-paced society, we use and dispose of many tons of material each year. Many of us don't consider the consequences of our daily routines of consumption. Much of this waste can be avoided by following our simple steps, outlined below.

GLOSSARY OF TERMS

Recycled content = Items that have been manufactured from reused material. *Postconsumer content* refers to material that is being reused from items used by consumers once before, rather than materials left over from manufacturing processes.

Compost = Allowing microorganisms to aid in the decomposition of organic waste materials by mixing or layering food scraps, dried leaves, or newspapers and other organic materials in a pile. This disposes of waste naturally, rather than becoming part of our landfills. Once sufficiently processed, compost can be used as an effective fertilizer for gardens and flower beds.

INFORMATION TO GATHER DURING AN AUDIT

1. Do you buy second-hand items?
2. Do you buy items with recycled content? Are you familiar with the term "postconsumer content"?
3. Do you buy durable and reusable items?
4. Do you recycle?
5. Do you compost?
6. Do you reuse containers?
7. Do you consider the amount of packaging and the recyclability of products when you are shopping?
8. Do you bring your own bags when shopping?
9. How often is your garbage collected? What size bins do you have?
10. Are you aware of local recycling services, composting services, and information sources?

RECOMMENDATIONS: CONSUMPTION AND WASTE REDUCTION

1. **Purchase second-hand items**, including clothes, housewares, and building materials. Peruse our thrift stores and garage sales for treasures and savings.
 - St. Vincent de Paul, Goodwill, Value Village, and the Salvation Army offer a large variety of used clothes and other household items.
 - Infinity Mercantile, Rags Connection, and Buffalo Exchange offer higher-end used clothes for consignment or buying.
2. **Buy items with recycled content** to avoid emissions associated with gathering raw materials.
3. **Buy durable products**. Buy items made to last to reduce the emissions associated with production, transportation, and disposal. Items that can be repaired rather than tossed make a difference, too.
 - Avoid **disposable items**.

4. **Recycle** everything that you can. Depending on how much you use, for a three-person household:
 - Recycling **plastic** can cut 141 pounds of CO₂-equivalent from your annual GHG emissions. Many stores also take back or recycle plastic bags.
 - Recycling **aluminum and steel cans** can cut 497 pounds of CO₂-equivalent from your annual GHG emissions.
 - Recycling **paper** reduces your annual GHG emissions by 553 pounds of CO₂-equivalent.
 - Recycling **glass** cuts 77 pounds of CO₂-equivalent annually.
 - **Recycle used computers, cell phones, and other electronics** to reduce the use of raw materials and keep toxins out of landfills.
 - NextStep Recycling offers electronic recycling services for our area. They are located at 2101 W. 10th Street in Eugene. They are available for more information at (541) 686-2366 or on the Internet at www.nextsteprecycling.org.
 - **Take old building supplies to BRING Recycling.** Give used building materials a second life. BRING Recycling is located in a new facility at 4446 Franklin Boulevard in Glenwood. They can be reached by phone at (541) 746-3023 or on the web at www.bringrecycling.org.
 - **Properly dispose of your compact fluorescent lights and other household chemicals** with the City of Eugene. Call (541) 682-4120 to schedule an appointment. Fluorescents can also be recycled at most hardware stores to avoid releasing mercury into landfills.
5. **Compost or use worm bins** to reduce methane emissions. One-and-a-half pounds of CO₂-equivalent is saved for each pound of organic waste that is composted.
 - The OSU Extension Service offers information on composting as well as workshops on home composting and earthworm bins. For more information on composting workshops offered through their program, visit extension.oregonstate.edu/lane/announcement/compost_workshops.
6. **Reuse containers.** Wash them out and reuse them rather than disposing of them.
7. **Avoid packaged items.** The less packaging that you throw away, the less material you are wasting.
8. **Bring your own bags** when you shop. This will reduce or eliminate the need to take home plastic or paper bags from the store. Many stores also give a discount when you use your own bags.
9. **Reduce the number of times per month that your trash is collected.** Follow the preceding eight guidelines to spend less money on your garbage service.
 - Sanipac offers several choices for home trash pick-up. Sanipac is available at (541) 736-3600 or www.sanipac.com.

RESOURCES: WASTE REDUCTION

1. General recycling and solid waste information. (City of Eugene) www.eugene-or.gov/portal/server.pt?space=CommunityPage&cached=true&parentname=CommunityPage&parentid=0&in_hi_userid=2&control=SetCommunity&CommunityID=232&PageID=0



YARD CONSULTATION WORKSHEET

(ADAPT TO YOUR COMMUNITY)

Section 4.0 Yard

Introduction

Often, when we think about ways that we can reduce our ecological footprint, visions of large dollar signs and home improvements come to mind. However, there are a number of things that we can do outside to significantly reduce our individual greenhouse gas outputs, which cost only time and can save us a bundle of money. Planting trees and raking leaves are a couple of things that we can do with our families that takes little time and effort, but reduce greenhouse gases substantially while building healthy relationships at the same time. Looking into our own backyards is a great place to start reducing our ecological footprint right now.

INFORMATION TO GATHER DURING AN AUDIT

1. Are there any trees in your garden?
2. Do you have a lawn?
3. How do you mow your lawn?
4. How often do you water your lawn?
5. Do you apply chemical pesticides and fertilizers?

RECOMMENDATIONS: YARD

1. **Plant trees.** A softwood tree can absorb twenty-six pounds of carbon dioxide annually, while trees planted on the south and west sides of your home can reduce your annual cooling energy use by 15 to 35 percent (three trees per building). This can save 200 to 600 pounds of carbon dioxide a year, and \$175 in cooling bills, while adding to the aesthetic quality of your yard and your property value.

2. **Reduce your lawn area.** Lawns require more inputs in the form of mowing, fertilizers, herbicides, and water than just about any other plants. Reducing the size of your lawn or planting an “eco-lawn” can save 150 pounds of carbon dioxide per year. Also, using native plants in your yard will create a better habitat for wildlife.

- PlantNative has a list of trees and shrubs native to our region. Planting native trees and shrubs require less water than nonnative exotic plants and provide wildlife habitat and forage. You can find PlantNative’s tree and shrub list at www.plantnative.org/rpl-orwa.htm.

3. **Use a push mower rather than an electric or gas mower.** This saves 150 pounds of carbon dioxide and about \$18 per year, and helps you get more exercise. The same applies to leaf blowers—using a rake instead saves seventy pounds per year, and benefits your compost pile.

4. **Reduce your water use in the yard** by setting the raising the blade height to three inches, as this will reduce the need to water. Other ways to conserve water are by leaving clippings on the lawn, and watering early in the morning or late in the afternoon, all of which reduce evaporation.

- King County’s Water Conservation Program provides water-saving tips and resources for the public. Their Smart Water tips can help reduce water consumption in your yard. King County’s main water conservation page is found on the web at dnr.metrokc.gov/wtd/waterconservation/ and their Smart Water website is www.metrokc.gov/dnrp/swd/naturalyardcare/watering.asp.

5. **Mulch with grass cuttings** instead of using chemical pesticides and fertilizers. You will need to use 25 percent less nitrogen fertilizer and save 38 percent in fuel costs for your lawn mower, leading to a saving of 100 pounds of carbon dioxide per quarter-acre.

RESOURCES: YARD

1. www.arborday.org/trees/index.cfm. A great site for information on trees.
2. www.plantnative.org/books_pw.htm. Plant Native is a website that helps guide regional gardeners in native plant species. Native plants have evolved with the local and regional climate, so they tend to require less water.

END NOTES

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